October 18, 1974 21

GOVERNMENT REPORTS ANNOUNCEMENTS

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NATIONAL TECHNICAL
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Contents may be printed freely. Mention of source will be appreciated. The Secretary of Commerce has determined that the publication of this periodical is necessary in the transaction of the public business required by law of this department. Use of funds for printing this periodical has been approved by the Director of the Office of Management and Budget through August 31, 1976.

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GOVERNMENT REPORTS ANNOUNCEMENTS

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SUBJECT FIELD AND GROUP STRUCTURE

(Use Edge Index on back cover to locate subject field in the Journal)

FIELD 1. AERONAUTICS. Includes the following Groups: Aerodynamics; Aeronautics; Aircraft; Aircraft Flight Control and Instrumentation; Air Facilities.

FIELD 2. AGRICULTURE. Includes the following Groups: Agricultural Chemistry; Agricultural Economics; Agricultural Engineering; Agronomy and Horticulture; Animal Husbandry; Forestry.

FIELD 3. ASTRONOMY AND ASTROPHYSICS. Includes the following Groups: Astronomy; Astrophysics; Celestial Mechanics.

FIELD 4. ATMOSPHERIC SCIENCES. Includes the following Groups: Atmospheric Physics; Meteorology.

FIELD 5. BEHAVIORAL AND SOCIAL SCIENCES. Includes the following Groups: Administration and Management; Documentation and Information Technology; Economics; History, Law, and Political Science; Human Factors Engineering; Humanities; Linguistics; Man-machine Relations; Personnel Selection, Training, and Evaluation; Psychology (Individual and Group Behavior); Sociology.

FIELD 6. BIOLOGICAL AND MEDICAL SCIENCES. Includes the following Groups: Biochemistry; Bioengineering; Biology; Bionics; Clinical Medicine; Environmental Biology; Escape, Rescue, and Survival; Food, Hygiene and Sanitation; Industrial (Occupational) Medicine; Life Support; Medical and Hospital Equipment; Microbiology; Personnel Selection and Maintenance (Medical); Pharmacology; Physiology; Protective Equipment; Radiobiology; Stress Physiology; Toxicology; Weapon Effects.

FIELD 7. CHEMISTRY. Includes the following Groups: Chemical Engineering; Inorganic Chemistry; Organic Chemistry; Physical Chemistry, Radio and Radiation Chemistry.

FIELD 8. EARTH SCIENCES AND OCEANOGRAPHY. Includes the following Groups: Biological Oceanography; Cartography; Dynamic Oceanography; Geochemistry; Geodesy; Geography; Geology and Mineralogy; Hydrology and Limnology; Mining Engineering; Physical Oceanography; Seismology; Snow, Ice, and Permafrost; Soil Mechanics; Terrestrial Magnetism.

FIELD 9. ELECTRONICS AND ELECTRICAL ENGINEERING. Includes the following Groups: Components; Computers; Electronic and Electrical Engineering; Information Theory; Subsystems; and Telemetry.

FIELD 10. ENERGY CONVERSION (Non-propulsive). Includes the following Groups: Conversion Techniques; Power Sources; Energy Storage.

FIELD 11. MATERIALS. Includes the following Groups: Adhesives and Seals; Ceramics, Refractories, and Glasses; Coatings, Colorants, and Finishes; Composite Materials; Fibers and Textiles; Metallurgy and Metallography; Miscellaneous Materials; Oils, Lubricants, and Hydraulic Fluids; Plastics; Rubbers; Solvents, Cleaners, and Abrasives; Wood and Paper Products.

FIELD 12. MATHEMATICAL SCIENCES. Includes the following Groups: Mathematics and Statistics; Operations Research.

FIELD 13. MECHANICAL, INDUSTRIAL, CIVIL, AND MARINE ENGINEERING. Includes the following Groups: Air Conditioning, Heating, Lighting, and Ventilating; Civil Engineering; Construction Equipment, Materials, and Supplies; Containers and Packaging; Couplings, Fittings, Fasteners, and Joints; Ground Transportation Equipment; Hydraulic and Pneumatic Equipment; Industrial Processes; Machinery and Tools; Marine Engineering; Pumps, Filters, Pipes, Fittings, Tubing, and Valves; Safety Engineering; Structural Engineering.

FIELD 14. METHODS AND EQUIPMENT. Includes the following Groups: Cost Effectiveness; Laboratories, Test Facilities, and Test Equipment; Recording Devices; Reliability; Reprography.

FIELD 15. MILITARY SCIENCES. Includes the following Groups: Antisubmarine Warfare; Chemical, Biological, and Radiological Warfare; Defense; Intelligence; Logistics; Nuclear Warfare; Operations, Strategy, and Tactics.

FIELD 16. MISSILE TECHNOLOGY. Includes the following Groups: Missile Launching and Ground Support; Missile Trajectories; Missile Warheads and Fuses; Missiles.

FIELD 17. NAVIGATION, COMMUNICATIONS, DETECTION, AND COUNTERMEASURES. Includes the following Groups: Acoustic Detection; Communications; Direction Finding; Electromagnetic and Acoustic Countermeasures; Infrared and Ultraviolet Detection; Magnetic Detection; Navigation and Guidance; Optical Detection; Radar Detection; Seismic Detection.

FIELD 18. NUCLEAR SCIENCE AND TECHNOLOGY. Includes the following Groups: Fusion Devices (Thermonuclear); Isotopes; Nuclear Explosions; Nuclear Instrumentation; Nuclear Power Plants; Radiation Shielding and Protection; Radioactive Wastes and Fission Products; Radioactivity; Reactor Engineering and Operation; Reactor Materials; Reactor Physics; Reactors (Power); Reactors (Non-power); SNAP Technology.

FIELD 19. ORDNANCE. Includes the following Groups: Ammunition, Explosives, and Pyrotechnics; Bombs; Combat Vehicles; Explosions, Ballistics, and Armor; Fire Control and Bombing Systems; Guns; Rockets; Underwater Ordnance.

FIELD 20. PHYSICS. Includes the following Groups: Acoustics; Crystallography; Electricity and Magnetism; Fluid Mechanics; Masers and Lasers; Optics; Particle Accelerators; Particle Physics; Plasma Physics; Quantum Theory, Solid Mechanics; Solid-state Physics; Thermodynamics; Wave Propagation.

FIELD 21. PROPULSION AND FUELS. Includes the following Groups: Air-breathing Engines; Combustion and Ignition; Electric Propulsion; Fuels; Jet and Gas Turbine Engines; Nuclear Propulsion; Reciprocating Engines; Rocket Motors and Engines; Rocket Propellants.

FIELD 22. SPACE TECHNOLOGY. Includes the following Groups: Astronautics; Spacecraft; Spacecraft Trajectories and Reentry; Spacecraft Launch Vehicles and Ground Support.

REPORTS & TRANSLATIONS

1. AERONAUTICS

1A. Aerodynamics

AD-783 621/6GA PC$3.25/MF$2.25
Tennessee Univ Space Inst Tullahoma
AN APPROXIMATE SOLUTION OF UNSTEADY TRANSONIC FLOW PROBLEMS.
Technical rept. Jun 73-Jan 74,
J. M. Wu, and K. R. Kimble. Jun 74, 39p AFFDL-TR-74-32
Contract F33615-73-C-3119

Descriptors: *Airfoils, *Transonic flow, Control surfaces, Flow fields, Differential equations, Numerical analysis.

Unsteady pressures on a thin two-dimensional airfoil pitching and plunging in transonic flow have been computed by numerically solving the governing partial differential equation. The effect of wing thickness has been retained by using the steady flow potential on the wing in the coefficients of the equation in a manner which generalizes Oswatitsch's parabolic method. The results are compared with other methods and with experimental data. (Author)

AD-783 649/7GA PC$6.00/MF$2.25
Lockheed Missiles and Space Co Inc Huntsville Ala Huntsville Research and Engineering Center
ANALYSIS OF PREDICTED AIRCRAFT WAKE VORTEX TRANSPORT AND COMPARISON WITH EXPERIMENT. VOLUME I. WAKE VORTEX PREDICTIVE SYSTEM STUDY.
Final rept. Apr-Dec 73,
M. R. Brashears, N. A. Logan, S. J. Robertson, K. R. Shrider, and C. D. Walters. Apr 74, 249p TSC-FAA-74-7-Vol-1, FAA-RD-74-74-I
Contract DOT-TSC-593
See also Volume 2, AD-783 665.

Descriptors: *Transport aircraft, *Wake, *Vortices, *Aviation safety, Roll, Airplane models, Mathematical models, Wind shear.

A unifying wake vortex transport model is developed and applied to a wake vortex predictive system concept. The fundamentals of vortex motion underlying the predictive model are discussed including vortex decay, bursting and instability phenomena. A parametric and sensitivity analysis is presented to establish baseline uncertainties in the algorithm to allow meaningful comparison of predicted and measured vortex tracks. A detailed comparison of predicted vortex tracks with photographic and groundwind vortex data is presented. Excellent agreement between prediction and measurement is shown to exist when sufficient wind data are available. Application of the Pasquill class criteria is shown to be an effective technique to describe the wind profile in the absence of detailed wind data. The effects of wind shear and the Ekman spiral on vortex transport are discussed. It is shown that the combination of wind shear and ground plane may be possible mechanisms underlying vortex tilting and a theoretical explanation is advanced that is somewhat supported by comparison with the experimental data. Finally, recommendations for further vortex data collection in the vicinity of an airport are presented. (Author)

AD-783 665/3GA PC$6.00/MF$2.25
Lockheed Missiles and Space Co Inc Huntsville Ala Huntsville Research and Engineering Center
ANALYSIS OF PREDICTED AIRCRAFT WAKE VORTEX TRANSPORT AND COMPARISON WITH EXPERIMENT. VOLUME II. APPENDIXES.
Final rept. 2 Apr-2 Dec 73,
M. R. Brashears, N. A. Logan, S. J. Robertson, K. R. Shrider, and C. D. Walters. Apr 74, 231p TSC-FAA-74-7-Vol-2, FAA-RD-74-74-II
Contract DOT-TSC-593
See also Volume 1, AD-783 649.

Descriptors: *Transport aircraft, *Wake, *Vortices, *Aviation safety, Roll, Airplane models, Mathematical models, Wind shear, Computer programming.

Contents:
Summary of aircraft flybys;
Probable stability conditions prevalent during selected NAFEC flybys at Atlantic City, N.J.;
Description of output plots of wake vortex transport computer program;
Description of input requirements for Lockheed wake vortex tramsport computer program;
Summary of line printer output of Lockheed wake vortex transport computer program;
Flow charts for Lockheed wake vortex transport computer program;
Summary of predicted wake vortex tracks and comparison with experiment
;
Report of inventions.

AD-783 750/3GA PC$3.25/MF$2.25
Hydronautics Inc Laurel Md
SIMULATION OF WAKE VORTICES DESCENDING IN A STABLY STRATIFIED ATMOSPHERE.
Final rept. Sep 73-Mar 74,
Clinton E. Brown, and Karl Kirkman. Jul 74, 38p
FAA-RD-74-116, TSC-FAA-74-13
Contract DOT-TSC-694

Descriptors: *Wake, *Atmospheric disturbances, *Aerodynamic control surfaces, *Model tests, *Simulation, *Model basins, Hydrodynamics, Vortices, Stratification, Aircraft.
Identifiers: *Aircraft wakes, *Vortex decay, Towing tanks.

An experimental water tank simulation of aircraft wake vortices descending in a stable atmosphere has indicated that the atmospheric stability stops the downward movement and in some cases produces a subsequent rebound. The tests were carried out in a large ship model basin using a rectangular planform wing. Lift coefficients were selected, and stable atmospheric conditions were obtained by temperature (density) stratification of the towing basin. The model parameters and stability conditions cover the most extreme cases to be expected in full scale flight.

SLA-73-7048-A PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
APPLICATIONS OF DIGITAL SPECTRAL ANALYSIS AND FILTERING TO AERODYNAMIC TESTING.
E. L. Jr. Clark, and R. H. Jr. Croll. 19p CONF-740704-1

Descriptors: (*Aerodynamics, *Mathematics), (*Spectra, *Data processing), Amplitudes, Attenuation, Data, Fourier transformation, Geophysics, Sound waves, Time dependence, Turbulence.

For abstract, see NSA 30 04, number 12189.

UCRL-51529 PC$5.45/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
SECOND AND THIRD ORDER DIFFERENCE TECHNIQUES FOR TWO-DIMENSIONAL HYPERBOLIC SYSTEMS OF CONSERVATION LAWS, WITH AN APPLICATION TO TRANSONIC FLOW ABOUT AN AIRFOIL.
A. A. Mirin. 22 Apr 74, 80p
Contract W-7405-eng-48

Descriptors: (*Transonic flow, *Two-dimensional calculations), Adjoint difference method, Aircraft, Algorithms, Conservation laws, Differential equations, Fluid flow, Numerical solution, Time dependence, Two-phase flow.

For abstract, see NSA 30 05, number 14712.

1B. Aeronautics

AD-783 938/4GA PC$3.00/MF$2.25
Winzen Research Inc Minneapolis Minn
CRITERIA FOR CONTROLLING VERTICAL MOTION OF STRATOSPHERIC BALLOONS.
Final rept. 12 Apr 73-23 Apr 74,
Jean R. Nelson. 23 Apr 74, 24p Rept no. WRI-1300
Contract N00014-73-C-0382

Descriptors: *Balloons, *Stratosphere, Flight testing, Data acquisition, Equations of motion, Computer programs.
Identifiers: RISERATE computer program.

This report analyzes a number of balloon flights to determine empirical constants for the equation developed by the University of Minnesota. A computer program RISERATE was developed to accept flight data for the values in the percent lift equation shown and solve simultaneous equations for values of the empirical constants C1 and C2. These average values for balloons up to 20 million cubic feet volume were C1 = 0.000378 and C2 = 0.000000463. (Modified author abstract)

PB-234 791/2GA PC$3.00/MF$2.25
National Transportation Safety Board, Washington, D.C. Bureau of Aviation Safety.
AIRCRAFT ACCIDENT REPORT. NATIONAL AIRLINES, INC., MCDONNELL-DOUGLAS DC-10-10, N6ONA, NEAR TAMPA, FLORIDA. JULY 8, 1974.
Aircraft accident rept.
24 Jul 74, 10p NTSB-AAR-74-9

Descriptors: *Aviation accidents, *Accident investigations, Collision research, Civil aviation, Cowlings, Aircraft engines, Separation, Damage, Leading edges, Landing, Maintenance, Errors.
Identifiers: DC-10 aircraft.

About 0940 e.d.t. on July 8, 1974, cowling from the aft section of the No. 1 engine of National Airlines, Inc., Flight 41, separated from the aircraft during climbout from Miami International Airport, Miami, Florida. The cowling tore large holes in the left wing leading edge and in the upper wing surface before being ingested into the No. 2 engine. The flightcrew made an immediate emergency landing at Tampa International Airport, Tampa, Florida, without further difficulty. There was no injuries. The National Transportation Safety Board determines that the probable cause of the accident was the failure of company maintenance personnel to complete the installation of mounting bolts on the inboard panel of the No. 1 engine core cowl.

1C. Aircraft

AD-783 500/2GA PC$4.00/MF$2.25
Modern Army Selected Systems Test Evaluation and Review Fort Hood Tex
DRICLAD HELICOPTER STORAGE (DRICLAD) SYSTEM.
Final rept. 19 Feb-Jun 74,
Kurt O. Beilharz. 19 Jul 74, 88p Rept no. MASSTER-Test-FM-251

Descriptors: *Helicopters, *Protective coverings, Field tests, Protection, Plastics, Stress concentration, Seals, Moisture, Drainage.
Identifiers: UH-1H aircraft, H-1 aircraft, Huey Cobra.

The purpose of the test was to evaluate the effectiveness and durability of the British manufactured DRICLAD system when employed for temporary storage of helicopters by a TOE aviation unit. The system effectively protected the two UH-1H helicopters used during the 16 trials of a 6- to 50-day storage period. However, the test showed that the system, in its present configuration, had several shortcomings which, if not corrected, could have a serious impact on the

system's ability to protect aircraft beyond 50 days. The major shortcomings noted were the extreme tightness of the plastic cover which prevented free air circulation and caused stress damage to the cover; the inadvertent opening of the plastic zipper (Drilok closure) which made it necessary to continuously monitor the system; the inadequate seal for the landing gear cross tubes which allowed water to enter the cover during heavy rains; and the inadequate drainage system in the bottom cover section which prevented the drainage of moisture from the system. (Modified author abstract)

AD-783 517/6GA PC$4.00/MF$2.25
Naval Weapons Lab Dahlgren Va
AIRCREW AUTOMATED ESCAPE SYSTEM SIMULATION MODEL.
Technical rept.,
Christopher Gracey. Feb 74, 90p Rept no. NWL-TR-3098

Descriptors: *Ejection seats, *Vertical takeoff aircraft, Mathematical models, Equations of motion, Catapults, Rocket propulsion, Drogue parachutes, Deployment, Stabilization systems, Short takeoff aircraft, Marine Corps.
Identifiers: SEU-3/A escape systems, AV-8A aircraft, V-8 aircraft.

A math model is presented for simulating the performance of the SEU-3/A Ejection Seat Escape System which employs propulsion, parachute, and stabilization subsystems. Seat/man, man alone, and seat alone configurations are treated as rigid bodies in six degrees-of-freedom. 'Canopy first' recovery parachute deployment by rocket and/or drogue parachute is modelled as well as 'lines first' drouge deployment. Parachute opening equations are treated in detail, and riser/suspension line forces are assumed to be elastic. In addition, an aircraft model is formulated. (Author)

AD-783 600/0GA PC$3.75/MF$2.25
Mcdonnell Douglas Corp St Louis Mo
HIGH ACCELERATION COCKPITS FOR ADVANCED FIGHTER AIRCRAFT VOLUME I. PROGRAM SUMMARY.
Final technical rept. 1 Apr-14 Dec 73,
James M. Sinnett. May 74, 56p Rept no. MDC-A2631-Vol-1 AFFDL-TR-74-48-Vol-1
Contract F33615-73-C-3067
See also Volume 2, AD-783 601.

Descriptors: *Jet fighters, *Cockpits, *Human factors engineering, Configurations, Static tests, Acceleration, Maneuverability, Ejection seats, Air force research.
Identifiers: Articulating seats, High G cockpits, F-4 aircraft, Design.

A high acceleration cockpit design integration program was conducted for an advanced fighter concept with direct lift and direct side force capabilities. Program efforts included an assessment of basic pilot tasks in fighter mission, using the configuration direct force and high acceleration design features. Cockpit functional capabilities were tailored to satisfy operational needs, providing for normal flight and combat phases of the mission. Several configuration design alternatives were evaluated by USAF pilots in a static simulation cockpit evaluation phase. Resulting objective and subjective measures allowed ranking of configuration concepts. Several principal areas for future high acceleration cockpit development were defined. (Author)

AD-783 601/8GA PC$4.00/MF$2.25
Mcdonnell Douglas Corp St Louis Mo
HIGH ACCELERATION COCKPITS FOR ADVANCED FIGHTER AIRCRAFT. VOLUME II. CREW STATION DESIGN/INTEGRATION.
Final technical rept. 1 Apr-14 Dec 73,
Robert E. Mattes, Leslie N. Edgington, and James Roberts, Jr. May 74, 80p Rept no. MDC-A2631-Vol-2 AFFDL-TR-74-48-Vol-2
Contract F33615-73-C-3067
See also Volume 1, AD-783 600, and Volume 3, AD-783 602.

Descriptors: *Jet fighters, *Cockpits, *Human factors engineering, Acceleration, Display systems, Electrooptics, Mission profiles, Aeronautics, Ejection seats, Configurations, Air Force research.
Identifiers: Articulating seats, High G cockpits, F-4 aircraft, Design, Crew stations.

A high acceleration cockpit design integration program was conducted for an advanced fighter concept with direct lift and side force capabilities. Program efforts included an assessment of required cockpit controls and displays considering both functional requirements and basic pilot tasks in a fighter mission. Cockpit functional capabilities were tailored to satisfy operational needs considering the integration of an articulating ejection seat and fly-by-wire side arm controllers. Several configuration design alternatives were constructed for subsequent evaluation by USAF pilots in a static design aid evaluation phase. (Modified author abstract)

AD-783 602/6GA PC$3.75/MF$2.25
Mcdonnell Douglas Corp St Louis Mo
HIGH ACCELERATION COCKPITS FOR ADVANCED FIGHTER AIRCRAFT. VOLUME III. TEST PLAN.
Final technical rept. 1 Apr-14 Dec 73,
Carl F. Asiala, and Thomas J. Quinn. May 74, 66p Rept no. MDC-A2631-Vol-3 AFFDL-TR-74-48-Vol-3
Contract F33615-73-C-3067
See also Volume 2, AD-783 601, and Volume 4, AD-783 603.

Descriptors: *Jet fighters, *Cockpits, *Human factors engineering, Configurations, Static tests, Ejection seats, Anthropometry, Mission profiles, Aeronautics, Display systems, Electrooptics.
Identifiers: Articulating seats, High G cockpits, F-4 aircraft, Design.

A high acceleration cockpit design and integration program was conducted, using a full scale design aid. Alternate configurations were compared using this full scale design aid in a formally structured evaluation including mission related task elements. Crew station characteristics were thus related to operator needs in a mission context for advanced fighter concepts. (Author)

AD-783 603/4GA PC$4.00/MF$2.25
Mcdonnell Douglas Corp St Louis Mo
HIGH ACCELERATION COCKPITS FOR ADVANCED FIGHTER AIRCRAFT. VOLUME IV. TEST RESULTS.
Final technical rept. 1 Apr-14 Dec 73,
Carl F. Asiala, and Thomas J. Quinn. May 74, 94p Rept no. MDC-A2631-Vol-4 AFFDL-TR-74-48-Vol-4
Contract F33615-73-C-3067
See also Volume 3, AD-783 602.

Descriptors: *Jet fighters, *Cockpits, *Human factors engineering, Configurations, Acceleration, Maneuverability, Ejection seats, Anthropometry, Mission profiles, Aeronautics, Display systems, Electrooptics.
Identifiers: Articulating seats, High G cockpits, F-4 aircraft, Design.

A high acceleration cockpit design test/evaluation program was conducted, using a full scale design aid. Alternate configurations were compared using this full scale design aid in a formally structured evaluation including mission related task elements. Test criteria considered evaluation of control/display and cockpit design options, including seat location, motion, and pilot anthropometry, with a balance between the physical and operational test measures and objectives using Air Force provided pilot subjects. (Author)

AD-783 604/2GA PC$3.25/MF$2.25
Rand Corp Santa Monica Calif
QUICK FIX: REDUCING AIRCRAFT INSPECTION REDUNDANCY BETWEEN BASE AND DEPOT.
Milton Kamins. Apr 73, 37p Rept no. R-1177-PR
Contract F44620-73-C-0011

Descriptors: *Jet fighters, *Maintenance, Reliability, Inspection, Scheduling, Logistics support, Redundancy, Maintenance personnel.
Identifiers: F-4 aircraft.

The Air Force Logistics Command (AFLC), the Ogden Air Materiel Area (OOAMA), and The Rand Corporation are jointly conducting a Levels of Maintenance Study (LOMS). This report describes a portion of that study. It presents the charts and text of a briefing concerning an alternative arrangement for performing major base-level scheduled inspections on F-4 aircraft to reduce redundancy between base and depot inspections. It explains the proposed method, describes several factors that make it seem both sensible and appropriate, and suggests field testing. In addition, it extends the information presented at the briefing by providing background research.

AD-783 636/4GA PC$6.75/MF$2.25
Rockwell International Corp Los Angeles Calif Los Angeles Aircraft Div
FIGHTER TECHNOLOGY DEMONSTRATOR PRECURSOR ANALYSIS AND TEST. VOLUME I. BASELINE DEVELOPMENT AND TECHNOLOGY IDENTIFICATION.
Final rept. May-Oct 73.
Nov 73, 281p AFFDL-TR-73-112-Vol-1
Contract F33615-73-C-3135
See also Volume 2, dated Nov 73, AD-779 742.

Descriptors: *Jet fighters, *Jet flaps, Wind tunnel tests, Canard configuration, Stability, Angle of attack.
Identifiers: Design criteria.

The development of a manned fighter technology demonstrator design, with potential for near-term in-flight evaluation of advanced technologies, is presented. To support the development of this precursor air vehicle, a prime purpose of the study was to establish design goals and criteria against which in-flight technology demonstration could be practically measured. An additional purpose of the study was to assess the usefulness of a selected number of additional technologies for inclusion in the baseline configuration. A final purpose was to conduct a wind tunnel test to provide supportive information of several advanced concepts. Wind tunnel test results showed increased induced life effects with increasing jet flap span and a significant canard contribution to high angle-of-attack directional stability. This latter effect is very important in allowing full use of increased angle-of-attack performance, since it suppresses postall gyration and spin tendencies. (Modified author abstract)

AD-783 639/8GA PC$6.00/MF$2.25
General Dynamics/Convair San Diego Calif
WEAPON SYSTEM COSTING METHODOLOGY FOR AIRCRAFT AIRFRAMES AND BASIC STRUCTURES. VOLUME I. COST METHODS RESEARCH AND DEVELOPMENT.
Technical rept. Jul 72-Sep 73,
R. E. Kenyon, and J. M. Youngs. Dec 73, 233p AFFDL-TR-73-129-Vol-1
Contract F33615-72-C-2083

Descriptors: *Aircraft, *Airframes, *Costs, Estimates, Cost analysis, Aerodynamic control surfaces, Composite materials, Manufacturing, Computer programming.
Identifiers: Design to cost, Cost estimating relationships.

This report presents the interim results of a study aimed at extending cost estimating techniques developed and demonstrated under a previous

contract. The previous study resulted in two separate estimating methods: a trade study and a system costing method. These methods provided two essential estimating capabilities: the capability of assessing the relative difference in the cost of the basic structures attributable to variations in type of construction and material in an iterative fashion to support tradeoff studies during the preliminary design process, and the capability of accurately estimating total airframe costs in manhours and materials for selected design while retaining sensitivity to type of material and construction. (Modified author abstract)

AD-783 683/6GA PC$6.00/MF$2.25
General Electric Co Wilmington Mass Aerospace Instruments and Product Support Dept
INTEGRATED ENGINE INSTRUMENT SYSTEM.
Final technical rept. 29 Aug 72-30 Nov 73 on Phase 3,
R. L. Skovholt, D. E. Berglund, W. A. Doerle, W. R. Hiatt, and F. P. Johnson. Dec 73, 228p Rept no. DF73AEE189-Vol-1
Contract N62269-73-C-0135
See also Volume 2, AD-783 684.

Descriptors: *Aircraft engines, *Monitoring, *Computer applications, *Display systems, Instrumentation, Integrated systems, Human factors engineering, Engine components, Diagnostic equipment, Computer programming, Vertical takeoff aircraft, Short takeoff aircraft, Naval aircraft, Mission profiles, Recording systems, Faults, Maintenance, Airborne, Mechanical engineering, Costs, Data processing.
Identifiers: *Deck launched intercepts, *Subsonic surface surveillance, *Aircraft onboard sensing systems, *Integrated engine instrument systems.

A two-volume report documents the Phase 3 effort for the integrated engine instrument system (IEIS). IEIS is a computer-driven display and processing instrumentation system concerned with monitoring the aircraft engine's conditions in response to the anticipated needs of flight crew and maintenance personnel in the 1980-85 timeframe. Volume I covers engine analysis, including such topics as assumptions, subsonic missions, gas path, mechanical measurement, airborne computer operations, diagnostics, data recording, maintenance indication, fault isolation, gross thrust factor, airborne display, recommendations, and long term trending. Next, system design is discussed, involving requirements, vibration and temperature monitoring, data transmission, software and hardware, costs, program time and routines, reliability, recording, and an introduction to functions performed.

AD-783 684/4GA PC$6.00/MF$2.25
General Electric Co Wilmington Mass Aerospace Instruments and Product Support Dept
INTEGRATED ENGINE INSTRUMENT SYSTEM.
Final technical rept. 29 Aug 72-30 Nov 73 on Phase 3,
R. L. Skovholt, D. E. Berglund, W. A. Doerle, W. R. Hiatt, and F. P. Johnson. Dec 73, 229p Rept no. DF73AEE189-Vol-2
Contract N62269-73-C-0135
See also Volume 1, AD-783 683.

Descriptors: *Aircraft engines, *Monitoring, *Computer applications, *Display systems, Instrumentation, Integrated systems, Computer programming, Mechanical engineering, Reliability, Dynamics, Maintainability, Data processing, Detectors, Recording systems, Memory devices, Statics.
Identifiers: Engine cycle analysis, Deck launched intercepts, *Aircraft onboard sensing systems, Subsonic surface surveillance, Integrated engine instrument systems.

Volume two of a two-part report continues the discussion of a computer driven display and processing instrumentation system for monitoring an aircraft engine's conditions in response to anticipated needs in the 1980-85 time frame. Some of the topics are hardware components, measuring and recording instruments, data processing systems, computer memory requirements, reliability and maintainability, software elements, display hardware, mechanical features, display engineering, dynamic and static evaluations, aircraft performance curves, modifications, automation, energy management, conclusions, and recommendations.

AD-783 736/2GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
AIRCRAFT GLASS FLAW DETECTION,
V. Lopukhovskii. 29 May 74, 4p Rept no. FSTC-HT-23-1826-73
Trans. of Aviatsiya i Kosmonsvtika (USSR) n4 p27 1973, by James McVay.

Descriptors: *Aircraft equipment, *Windows, Polymers, Defects(Materials), Test equipment, Translations, USSR.

The author describes an instrument kit proposed by aviators. Transparent polymer materials have enjoyed wide application in aviation as aircraft cockpit windows and for other purposes. Articles made of polymer materials must be evaluated for further operational suitability when defects appear and during prevention maintenance and repair. The kit serves this purpose.

AD-783 739/6GA PC$13.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
REFERENCE MANUAL ON AVIATION MATERIALS,
Victor Georgievich Aleksandrov. Nov 73, 196p Rept no. FSTC-HT-23-1827-73
Trans. of mono. Spranochnik po Aviagtionnym Materialam, Moscow, 1972 196p.

Descriptors: *Aircraft equipment, *Manuals, Steel, Alloys, Ceramic materials, Plastics, Sealants, Paints, Coatings, Varnishes, Adhesives, Aluminum alloys, Magnesium alloys, Beryllium, Iron, Translations, USSR.

Operation, servicing and repair of aviation equipment involves the use of various materials, working liquids, compressed gases and other substances. Their correct use makes possible an improved level of technical operation, an increased time period for service and improved reliability of aviation equipment. The book gives the physical, chemical and mechanical properties of steel, nonferrous alloys on a nickel base and on a base of hard-to-melt metals and plastics and ceramic metals which operate in washing liquids, fuel and lubricating materials etc. When using various materials it is necessary to take into account the actual operating conditions, that is, the character of load, temperature, the composition and properties of exterior media, altitude and load capacity of aircraft. Therefore, this handbook presents not only numerical data which characterize the various materials, but also recommendations on technological use and rational utilization during operation, servicing and repair of aviation equipment.

AD-783 749/5GA PC$3.25/MF$2.25
National Aviation Facilities Experimental Center Atlantic City N J
SIMULATED GROUND-LEVEL STOL RUNWAY/AIRCRAFT EVALUATION. PHASE III TESTS.
Final rept. Jun-Jul 73,
Roman M. Spangler, Jr. Aug 74, 49p Rept no. FAA-NA-73-98 FAA-RD-74-96
See also report dated Sep 73, AD-766 899.

Descriptors: *Short takeoff aircraft, *Aircraft landings, Approach, Runways, Landing forces, Friction, Angle of attack, Performance(Human), Moisture.
Identifiers: Twin Otter aircraft.

A De Havilland DHC-6 Series 100 Twin Otter was flown by five pilots of varied experience on 7.5 degree steep-gradient approaches onto a ground-level STOL runway. Forty (40) approaches and landings were accomplished using an angle-of-attack indicator (airspeed indicator blocked out) as primary speed control. Pilot performance as compared to performance with the airspeed indicator as primary speed control was slightly improved. A series of 6 degree steep approaches was made in simulated certification landing tests with dry and wet runways at various water depths. Runway friction, stopping, and landing distances were measured, and stopping distance ratios are shown. Maximum vertical touchdown velocities on steep approaches were also evaluated. (Author)

AD-783 839/4GA PC$6.75/MF$2.25
Naval Postgraduate School Monterey Calif
TWO DIMENSIONAL ANALYSIS OF FLUID-STRUCTURE INTERACTION BY METHOD OF FINITE DIFFERENCES - HYDRAULIC RAM, THE FUEL TANK PROBLEM.
Master's thesis,
John Charles Bitzberger. Jun 74, 72p

Descriptors: *Jet aircraft, *Fuel tanks, *Terminal ballistics, *Projectiles, Finite difference theory, Dynamic loads, Computer programs, Equations of motion, Numerical analysis, Acceleration, Velocity, Walls, Rupture, Deformation, Theses, Vulnerability, FORTRAN.
Identifiers: FORTRAN 4 programming language, *Hydraulic ram effect.

As part of an ongoing research program at the Naval Postgraduate School concerned with aircraft vulnerability and, in particular, the 'Hydraulic Ram' phenomenon, two FORTRAN IV computer codes were written to analyze in two dimensions problems concerning structure-fluid interaction. This thesis presents the method selected for solution, details the codes written and presents test cases and example problems. User's instructions and program listings for both codes are also included. (Author)

AD-783 913/7GA PC$4.00/MF$2.25
Payne Inc Annapolis Md
ON THE AVOIDANCE OF LIMB FLAIL INJURY BY EJECTION SEAT STABILIZATION.
Final rept. 1 Oct 72-31 Mar 74,
Peter R. Payne. May 74, 86p Rept no. Working Paper-106-5 AMRL-TR-74-9
Contract F33615-73-C-4006

Descriptors: *Jet fighters, *Ejection seats, *Stabilization systems, Aviation injuries, Legs, Aerodynamic loading, Instability, Wind tunnel tests, Human factors engineering.
Identifiers: *Flail injuries.

After a review of the various causes of limb flail injury during high speed escape from an aircraft in an open ejection seat, the problem of flailing due to seat aerodynamic instability is addressed. The author concluded that there is no practical way of avoiding injury in an unstable seat. The causes of ejection seat instability are then examined, and a number of conventional and unconventional stabilization systems discussed. The author concluded that a new approach -- the in-plane stabilizer -- is probably the optimum solution to the problem. The theory of the in-plane stabilizer is developed and its effectiveness confirmed by full scale wind tunnel tests with an F-105 seat containing live human subjects. (Author)

AD-783 956/6GA PC$6.00/MF$2.25
Boeing Aerospace Co Seattle Wash
COCKPIT SWITCHING STUDY: TEST AND VALIDATION OF A DESIGN PROCEDURE FOR MULTIFUNCTION SWITCHING CONTROLS.
Annual technical rept. 1 Feb 73-31 Jan 74,
David K. Graham. Jul 74, 239p Rept no. D180-18069-1 JANAIR-740701

Contract N00014-72-C-0191
See also report dated May 73, AD-764 617.

Descriptors: *Electric switches, *Cockpits, *Instrumentation, *Jet aircraft, *Control systems, Instrument dials, Logic circuits, Display systems, Control panels, Aeronautics, Mission profiles, Switching circuits, Human factors engineering, Handbooks, Reliability, Flight testing.
Identifiers: A-7 aircraft, A-7E aircraft, *Multifunction switching.

The document reports the test and validation of a 'handbook' design procedure, developed during an earlier study, for the step-by-step design of multifunction switching controls (MSC's). An MSC panel for the Navigation and Weapons Delivery System of the A-7E airplane was designed using the procedure, and this panel was then analytically compared with conventional controls on the basis of pilot workload. Variations of the baseline MSC were also designed and tested to ascertain the effect of imposing constraints on the design procedure. The workload comparison was accomplished using a digital computer program developed specifically for workload evaluation. Results show the MSC panels in all respects at least equal, and in most cases superior, to conventional controls on the basis of pilot workload. In addition to the workload advantage, the baseline MSC panel occupied only one-tenth the panel space required for equivalent conventional controls. (Modified author abstract)

CEA-CONF-2580 PC$4.25/MF$2.25
CEA Centre d'Etudes Nucleaires de Saclay, 91 - Gif-sur-Yvette (France).
TECHNICAL PROBLEMS ENCOUNTERED IN THE STUDY OF A DIRIGIBLE FREIGHTER.
D. Costes. 22 Oct 73, 25p CONF-731138-4
In French. U.S. Sales Only.

Descriptors: (*Aircraft, *Design), Meteorology, Propulsion, Transport, Wind.

For abstract, see NSA 30 04, number 12172.

SLA-73-5935 PC$5.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
INTERACTIVE AND OFF-LINE COMPUTER GRAPHICS APPLIED TO THE THEORETICAL AIRCRAFT/STORE SEPARATION PROBLEM.
H. R. Spahr. 1973, 38p CONF-740706-2

Descriptors: (*Aircraft, *Computer calculations), (*Explosives, *Detonations), Aerodynamics, Computer graphics, Computers, Documentation, Impact tests, Interactive display devices, Programming, Shape.

For abstract, see NSA 30 04, number 12188.

1D. Aircraft Flight Control and Instrumentation

AD-783 690/1GA PC$4.00/MF$2.25
Sanders Associates Inc Nashua N H
TACTILE DISPLAY FOR AIRCRAFT CONTROL.
Semi-annual technical rept. 1 Jan-30 Jun 74,
Don H. Rosa, Richard A. Sanneman, William H. Levison, and Jeffrey E. Berliner. 30 Jun 74, 94p
Contract N00014-73-C-0031, ARPA Order-2108
Prepared in cooperation with Bolt Beranek and Newman, Inc., Cambridge, Mass. Behavioral Science Div. See also report dated Jan 73, AD-757 344.

Descriptors: *Flight control systems, *Display systems, *Touch, *Instrument flight, Control panels, Skin(Anatomy), Senses(Physiology), Perception, Stimulation(Physiology), Electric current, Vibration, Intensity, Pilots.
Identifiers: *Tactile instrumentation, *Tactile display systems.

The program was directed towards the development of tactile displays for flight control. The results of the first phase of this program have been reported in the August '73 Final Report (AD-767 763). The report presents a description of an improved tactile display system and its evaluation as a one and two axis error display instrument during a series of manual tracking experiments. Both electrotactors and vibrotactors arrays were used. These experiments were run to obtain modeling data to predict the display performance during the forthcoming F-4 simulator evaluation phase of the program. The tracking error scores for the new tactile display are better than for the initial system. Of the four subjects employed during these tests, two preferred the electrotactor array because it provides a more clearly perceptable haptic display. (Modified author abstract)

1E. Air Facilities

AD-783 935/0GA PC$4.50/MF$2.25
Teledyne Ryan Aeronautical Co San Diego Calif
CATAPULT PERFORMANCE AND INTERFACE REQUIREMENTS FOR LAUNCH OF BQM-34 VEHICLES.
Final rept.
10 Jun 74, 104p Rept no. TRA-29369-5
Contract F04606-73-A-0048

Descriptors: *Target drones, *Catapults, Launchers, Performance(Engineering), Aerodynamic loading, Propulsion systems, Automatic pilots, Attitude control systems.
Identifiers: Firebee, Six degrees of freedom, BQM-34 drones, BQM-34A drones, BQM-34F drones.

The report provides information for the design of a catapult launcher for the Teledyne Ryan BQM-34A and BQM-34F series of drones. Information provides performance and vehicle interface data for an independent contractor to prepare cost estimates for the design and manufacture of a catapult launcher. Curves of engine data are provided for various temperature and pressure conditions. Aerodynamic loads for various pitch attitudes up to 250 KEAS are included. Limit load factor envelopes and limit loads for the present ground launch fittings are presented. Conclusions based on the results of a six-degree-of-freedom dynamic simulation study for a catapult launch of a BQM-34A with the LSI A/A37G-8 autopilot are given.

2. AGRICULTURE

2B. Agricultural Economics

PB-234 639/3GA
Mag Tape $97.50;Foreign $122.50
Statistical Reporting Service (USDA), Washington, D.C.
LIVESTOCK PRODUCTION, DISPOSITION AND INCOME.
Data file,
Robert Bellinghausen. 1972, 1 reel mag tape*
USDA/DF-73/017
Specify tape recording mode desired: 7 track, 556 or 800bpi, odd or even parity, bcd; or 9 track, 800bpi, odd parity, Ebcdic. Price includes documentation, PB-234 640 thru PB-234 643.

Descriptors: *Data file, *Livestock, *Production statistics, Tables(Data), Cattle, Swine, Sheep, Goats, Income, Farms, Inventories.

The file contains annual data covering production of livestock by state, income, and value of production from livestock cash receipts and disposition of livestock.

PB-234 640/1GA PC$3.25/MF$2.25
Statistical Reporting Service (USDA), Washington, D.C.
LIVESTOCK PRODUCTION, DISPOSITION AND INCOME. HOGS AND PIGS - REVISED ESTIMATES, 1965-69,
Robert Bellinghausen. Nov 72, 44p* Statistical Bull-496 USDA/DF-73/017b
For data file on magnetic tape, see PB-234 639.

Descriptors: *Data file, *Livestock, *Swine, *Production statistics, Tables(Data), Value, Estimates, Income, Classifications, Inventories, Income, Selected markets.
Identifiers: *Sows, *Hogs, *Pigs.

The publication presents a record of the revised estimates of the Crop Reporting Board, Statistical Reporting Service, relating to: (1) Number and classes of hogs March 1, June 1, September 1, and December 1, 1965-69. (2) Number and value of hogs, January 1, 1966-69 and December 1, 1967-69. (3) Sows farrowed and pig crops, 1965-69. (4) Number of hog farms, 1965-69. It continues and combines the official series on Hogs and Pigs previously shown in the following separate publications: (a) USDA Statistical Reporting Service, Hog Inventory and Pig Crops by States, 1960-64, Statistical Bulletin 383, December 1966. (b) USDA Statistical Reporting Service, Livestock and Poultry Inventory, January 1, Number, Value and Classes, by States, 1961-65, Statistical Bulletin No. 389, February 1967. Estimates for the period released currently in quarterly and annual reports were based primarily on survey returns from hog producers. Later these estimates were reviewed in relationship to slaughter records and revised when necessary.

PB-234 641/9GA PC$3.25/MF$2.25
Statistical Reporting Service (USDA), Washington, D.C.
LIVESTOCK PRODUCTION, DISTRIBUTION AND INCOME. MEAT ANIMALS - REVISED ESTIMATES, 1965-69,
Robert Bellinghausen. Mar 73, 39p* Statistical Bull-510 USDA/DF-73/017d
For data file on magnetic tape, see PB-234 639.

Descriptors: *Data file, *Livestock, *Cattle, *Swine, *Sheep, *Production statistics, Tables(Data), Income, Value, Estimates, Inventories.

The publication presents revised estimates of the Crop Reporting Board, Statistical Reporting Service, by State, for farm production, disposition and income from meat animals for 1965-69. These estimates continue the official series on these data previously shown in 'Meat Animals, Farm Production, Disposition and Income, by States, Statistical Bulletin No. 400, May 1967.' The revised State and U.S. series resulted from a thorough review of the original survey indication and estimates and takes into consideration the 1969 Census of Agriculture data.

PB-234 642/7GA PC$3.75/MF$2.25
Statistical Reporting Service (USDA), Washington, D.C.
LIVESTOCK PRODUCTION, DISPOSITION AND INCOME. CATTLE - REVISED ESTIMATES, 1965-70,
Robert Bellinghausen. Dec 72, 69p* Statistical Bull-503 USDA/DF-73/017a
For data file on magnetic tape, see PB-234 639.

Descriptors: *Data file, *Livestock, *Cattle, *Production statistics, Tables(Data), Value, Income, Estimates, Farms, Selected markets.
Identifiers: Calves.

The publication presents a record of the revised estimates of the Crop Reporting Board, Statistical Reporting Service, relating to: (1) Number, value and classes of cattle and calves on farms January 1, 1966-70. (2) Calf crop estimate for 1965-69. (3) Number of cattle and calves on feed for slaughter market, placements, and fed cattle marketings for 1965-70. (4) Number of cattle farms 1965-70.

PB-234 643/5GA PC$3.25/MF$2.25
Statistical Reporting Service (USDA), Washington, D.C.
LIVESTOCK PRODUCTION, DISTRIBUTION AND INCOME. SHEEP, LAMBS AND GOATS - REVISED ESTIMATES, 1965-70,
Robert Bellinghausen. Dec 72, 28p* Statistical Bull-502 USDA/DF-73/017c
For data file on magnetic tape, see PB-234 639.

Descriptors: *Data file, *Livestock, *Sheep, *Goats, *Production statistics, Tables(Data), Wool, Hair, Value, Estimates, Income, Farms, Inventories, Selected markets.
Identifiers: *Lambs.

The publication presents revised estimates of the Crop Reporting Board, Statistical Reporting Service, relating to: (1) Number, value and classes of sheep and lambs on farms January 1, 1966-70. (2) Lamb crop, wool and mohair production 1965-69. (3) Number of sheep and lambs on feed for slaughter market January 1, 1966-70. (4) Number of sheep and lambs on feed, marketing and placements, seven selected states, November 1, 1965-69, January and March 1, 1966-70. (5) Number of sheep farms 1965-70. The report continues and combines the official series on January 1 Inventory of sheep and lambs and goats, sheep and lambs on feed, and annual wool and mohair production previously shown in the following publications: (a) Livestock and Poultry Inventory, January 1, Number, Value and Classes, 1961-65, by States, Statistical Bulletin 389, February 1967. (b) Calf Crop, Lamb Crop, Wool Production, Mohair Production, United States, by States, 1960-64, Statistical Bulletin 392, February 1967. (c) Cattle and Calves and Sheep and Lambs on Feed, Selected States, 1959-65, Statistical Bulletin 387, January 1965.

2E. Animal Husbandry

TT-72-56042 PC$3.00/MF$2.25
Department of Agriculture, Washington, D.C.
SUBCUTANEOUS APPLICATION OF NEGUVON (BAYER) IN THE CONTROL OF HYPODERMOSIS (SUBKUTANA PRIMJENA NEGUVONA (BAYER) U SUZBIJANJU HIPODERMOZE),
S. Delic, R. I. Muftic, and J. Rukavina. 1974, 10p
Trans. of Veterinaria (Yugoslavia) v14 n4 1965, by Vojislav Pavasovic. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Cattle, *Drug therapy, Parenteral infusions, Veterinary medicine, Experimental data, Larvae, Drugs, Bioassay, Pharmacology.

The report discusses the effect of various Neguvon preparations on cattle warbles when applied subcutaneously under Yugoslav conditions.

TT-72-56045 PC$3.00/MF$2.25
Department of Agriculture, Washington, D.C.
FURTHER INVESTIGATIONS ON THE EFFECT OF DIFFERENT NEGUVON (BAYER) PREPARATIONS ON MIGRATING WARBLE LARVAE (DALJA ISPITIVANJA DJELOVANJA RAZNIH PRIPRAVAKA NEGUVONA (BAYER) NA MIGRIRAJUCE LARVE UGRKA),
S. Delic, R. I. Muftic, I. Rukavina, and M. Cankovic. 1974, 10p
Trans. of Veterinarski Glasnik (Yugoslavia) n5 p401-405 1967, by Vojislav Pavasovic. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Cattle, *Drug therapy, Pharmacology, Expenses, Veterinary medicine, Translations, Yugoslavia.

The report discussed the preparation and application of new combinations of Neguvan in order to find out better and cheaper methods for Yugoslav practive. In parallel with with the new combinations the efficiency of the 6% colloidal solution of Neguvon in carboxymetyl-cellulose after Delak was checked.

TT-72-56047 PC$3.00/MF$2.25
Department of Agriculture, Washington, D.C.
INVESTIGATIONS OF THE EFFICACY OF SOME ORGANOPHOSPHORUS COMPOUNDS APPLIED BY DIFFERENT METHODS IN CONTROLLING HYPODERMOSIS (ISTRAZIVANJA O HIPODERMA-LARVICIDNOM DJELOVANJU NEKIH ORGANOFOSFORNIH PREPARATA APLICIRANIH NA RAZLICITE NACINE),
I. Kutlesa, and I. Maric. 1974, 13p
Trans. of Veterinarski Glasnik (Yugoslavia) n12 p1015-1025 1963, by Vojislav Pavasovic. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Phosphorus organic compounds, *Pesticides, Life cycle, Pharmacology, Parasitic diseases, Veterinary medicine, Yugoslavia, Translations, Experimental data, Larvae.

Organophosphorus larvicides are to date the most effective remedy available for hypodermosis control and, in the opinion of many foreign and Yugoslav experts, this parasitic disease may be eradicated completely through their systematic use. Considering the lower toxicity, external application is recommended, the pour-on method being the most suitable.

TT-72-56051 PC$3.00/MF$2.25
Department of Agriculture, Washington, D.C.
DIFFERENCES IN BODY WEIGHT AND VALUE OF SKIN IN TREATED AND UNTREATED HYPODERMOSIS IN HEIFERS (RAZLIKE U TJELESNOJ TEZINI I VRIJEDNOSTI KOZA KOD LIJECENE I NELIJECENE HIPODERMOZNE JUNADI),
S. Delic, R. I. Muftic, and J. Rukavina. 1974, 9p
Trans. of Veterinarski Glasnik (Yugoslavia) n9 p727-731 1967, by Dorde Krivokapic. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Cattle, Body weight, Veterinary medicine, Parasitic diseases, Translations, Yugoslavia, Larvae, Skin(Anatomy).

Among the many of factors which have a negative influence on the development of cattle progeny, a certain role is played by hypodermosis. With the appearance of organo-phosphorous preparations and their application for prevention of hypodermosis it has become possible to compare the weight gain in treated animals and those infested by warbles. The objective of this report examines to what extent infestation affects on weight gain of heifers kept for breeding.

TT-73-54053 PC$3.00
Department of Agriculture, Washington, D.C.
CONTROL OF HYPODERMATOSIS BY MEANS OF ORGANO-PHOSPHORIC PREPARATIONS (BADANIA NAD ZWALCZANIEM HYPODERMATOZY ZA POMOCQ PREPARATOW FOSFORO-ORGANICZNYCH),
Czeslaw Maranski. 1974, 8p
Trans. of Wiadomosci Parazytologiczne (Poland) v13 n6 p679-684 1967, by Helena Massey. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Phosphorous organic compounds, *Pesticides, Pharmacology, Larvae, Reviews, Parasitic diseases, Poland, Translations, Veterinary medicine.

The report presents a state-of-the-art review on the control of the parasitic disease, hypodermatosis. Included are the effects of chemical preparations on larvae of cattle grub residing under the hides of cattle.

TT-73-54071 PC$3.00
Department of Agriculture, Washington, D.C.
NOTICE ABOUT THE EFFICIENCY OF 'BUBULIN' IN FIGHTING AGAINST BOTFLY (SPOSTREZEZENIA NAD SKUTECZNOSCIQ 'BUBULINU' W ZWALCZANIU GZA BYDLECEGO),
A. Zimowski. 1974, 8p
Trans. of Medycyna Weterynaryjna (Poland) v20 n3 p151-153 1964, by M. Jurecki. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Diptera, *Cattle, Drug therapy, Pharmacology, Toxicology, Veterinary medicine, Poland, Translations, Experimental data.
Identifiers: *Botflies.

The tests of the efficiency of 'Bubulin' preparation performed under Poland's geoclimatic conditions have shown it to be an efficient therapeutic in fighting against botfly. It has been ascertained that the number of hypodermic grubs in the cattle of the experimental group was always lower in comparison with the control group by 88.4--95.7%, in average 92.1%. The results obtained do not authorize to draw far-reaching conclusions owing to the small groups of animals used in experiments. Nevertheless the comparison of the results of other authors with the present ones allows to estimate the latter positively, the more so that the preparation proved to be little toxic.

2F. Forestry

PB-234 673/2GA PC$3.00/MF$2.25
North Central Forest Experiment Station, St. Paul, Minn.
LARCH LITTER REMOVAL HAS NO SIGNIFICANT EFFECT ON RUNOFF.
Forest service research note (Final),
Richard S. Sartz, and David N. Tolsted. Sep 73, 4p FSRN-NC-163

Descriptors: *Forest land, *Surface water runoff, Forest trees, Soils, Fluid infiltration, Hydrology.
Identifiers: Pine needles, Larix decidua, Litter.

Runoff was measured on paired litter-removed, litter-left plots in an 11-year-old European larch plantation. On five of the six pairs of plots, the plot with the litter left intact yielded more runoff. However, the differences were neither statistically nor hydrologically significant.

PB-234 674/0GA PC$3.00/MF$2.25
North Central Forest Experiment Station, St. Paul, Minn.
CHIP DEBARKING OF SEVERAL WESTERN SPECIES.
Forest service research note (Final),
William A. Hillstrom. Sep 73, 6p FSRN-NC-164

Descriptors: *Forest trees, *Chipping, *Bark, Chips, Pulpwood, Compressing, Salvage, Harvesting.
Identifiers: Debarking.

A higher yield from timber could be obtained by whole-tree chipping in the forest if there were an efficient way to remove bark after chipping. Compression debarking together with various conditioning treatments were used to debark wood chips from four western species. Although bark removal and wood recovery varied among species, red alder consistently yielded less than two percent residual bark content after processing and a wood recovery of 90%.

PB-234 675/7GA PC$3.00/MF$2.25
North Central Forest Experiment Station, St. Paul, Minn.
THEORETICAL METHODS FOR ESTIMATING MOMENTS OF INERTIA OF TREES AND BOLES.
Forest service research paper (Final),
John A. Sturos. Dec 73, 14p FSRP-NC-96

Descriptors: *Forest trees, Equations, Moments of inertia, Experimental data, Estimates, Design, Equipment, Harvesting.
Identifiers: Logging.

The report presents a theoretical method for estimating the mass moments of inertia of full trees and boles about a transverse axis. Estimates from the theoretical model compared closely with experimental data on aspen and red pine trees obtained in the field by the pendulum method. The theoretical method presented may be used to estimate the mass moments of inertia of other tree species for which field data are not available.

PB-234 787/0GA PC$3.00/MF$2.25
North Central Forest Experiment Station, St. Paul, Minn.
FIFTEEN-YEAR RESULTS FROM SIX CUTTING METHODS IN SECOND-GROWTH NORTHERN HARDWOODS.
Forest Service research paper (Final),
Gayne G. Erdmann, and Robert R. Oberg. Aug 73, 15p FSRP-NC-100

Descriptors: *Hardwoods, *Growth, Cutting, Density(Mass/Volume), Mortality, Forest trees.
Identifiers: Cordwood.

The report presents and compares stand growth and yield information from three single-tree selection cuts, a crop-tree release treatment, an eight-inch diameter limit cut, and an uncut control. Discusses the influence of stand density on basal area growth, cubic volume growth, and board-foot volume growth.

PB-234 792/0GA PC$3.00/MF$2.25
North Central Forest Experiment Station, St. Paul, Minn.
THE CAUSES OF FIRES ON NORTHEASTERN NATIONAL FORESTS.
Forest Service research paper (Final),
William A. Main, and Donald A. Haines. Sep 73, 10p FSRP-NC-102

Descriptors: *Forest fires, *Forest land, Lightning, Recreation, Land use, Fire prevention, Northeastern United States.
Identifiers: National forests.

The report presents cross-tabulations of classes of people, activities, and causes responsible for forest fires on national forests. The data combinations indicate that greater prevention efforts might be directed toward hunters and fishermen.

3. ASTRONOMY AND ASTROPHYSICS

3B. Astrophysics

AD-783 538/2GA PC$9.50/MF$2.25
Iowa Univ Iowa City Dept of Physics and Astronomy
THE MAGNETOSPHERE OF JUPITER AS OBSERVED WITH PIONEER 10. PARTS I, II, AND III.
Progress rept.,
J. A. Van Allen, D. N. Baker, B. A. Randall, C. K. Goertz, and T. G. Northrop. May 74, 127p Rept no. U. of Iowa-74-20
Contracts N00014-68-A-0196-0009, NAS2-5603
Sponsored in part by Contract NAS2-6553.

Descriptors: *Planetary atmospheres, *Jupiter(Planet), Magnetosphere, Electrons, Magnetic fields, Electric fields, Extraterrestrial radio waves, Electron flux, Intensity, Protons, Spectral energy distribution.
Identifiers: *Pioneer 10 spacecraft, *Jupiter atmosphere, Angular distribution.

Results of an exploratory survey of the absolute intensities, energy spectra, and angular distributions of energetic electrons and protons as a function of position along the trajectory of the Pioneer 10 spacecraft through the magnetosphere of Jupiter are given. Also discussed are the non-rigid rotation of the magnetodisc and Jovian synchrotron radiation at 10.4 cm as deduced from observed electron fluxes.

AD-783 679/4GA PC$5.25/MF$2.25
Iowa Univ Iowa City Dept of Physics and Astronomy
PIONEER X: OBSERVATIONS OF ENERGETIC ELECTRONS IN THE JOVIAN MAGNETOSPHERE,
B. A. Randall. Jun 74, 43p Rept no. U. of Iowa-74-26
Contracts N00014-68-A-0196-0009, NAS2-5603
Presented at the Neil Brice Memorial Symposium on Magnetospheres, Frascati (Italy), 28 May-1 Jun 74.

Descriptors: *Jupiter(Planet), *Planetary atmospheres, Electrons, Energetic properties, Spatial distribution, Magnetosphere, Radiation belts, Solar flares.
Identifiers: *Jupiter atmosphere, *Pioneer 10 spacecraft, Angular distribution, Galactic cosmic rays, Astronomical spectroscopy.

Results are given of a study of the intensities, energy spectra, and angular distribution of energetic particles in the magnetosphere of Jupiter; the heliocentric radial gradient of the intensity of galactic cosmic rays; and the occurrence, intensity, and angular distribution of solar flare particles and their propagation through the interplanetary medium at large heliocentric distances.

AD-783 776/8GA PC$4.75/MF$2.25
Naval Postgraduate School Monterey Calif
SIMULATION OF REDSHIFTS IN HYDROGEN BY PERTURBATIONS.
Master's thesis,
James Roger Meyer. Jun 74, 33p

Descriptors: *Quasars, *Hydrogen, *Spectral lines, *Doppler effect, Perturbations, Spectrum analysis, Quantum theory, Hamiltonian, Theses.
Identifiers: Red shift, Astronomical spectroscopy.

The problem of explaining the redshifts in the spectra of quasi-stellar objects is considered by using first-order quantum perturbation theory to examine classes of perturbing Hamiltonians to determine if they could cause a redshift in the spectrum of hydrogen. A method is developed for deriving necessary conditions that a perturbation must satisfy to yield a redshift and conclusions are given for several types of perturbations. (Modified author abstract)

CONF-730804-P1 PC$40.50/MF$2.25
Denver Univ., Colo.
13TH INTERNATIONAL COSMIC RAY CONFERENCE, DENVER, COLORADO, 17–30 AUGUST 1973. VOLUME 1. OG SESSIONS.
1973, 747p

Descriptors: (*Cosmic radiation, *Meetings), Colorado.

For abstract, see NSA 30 04, number 10578.

NP-20012 PC$10.75/MF$2.25
Niels Bohr Institutet, Copenhagen (Denmark); Nordisk Inst. for Teoretisk Atomfysik, Copenhagen (Denmark).
EQUATION OF STATE AT ULTRA HIGH DENSITIES.
V. Canuto. 1974, 152p
U.S. Sales Only.

Descriptors: (*Neutron stars, *Density), (*Matter, *Equations of state), Reviews.

For abstract, see NSA 30 04, number 10761.

NP-20014 PC$4.00/MF$2.25
Oxford Univ. (UK). Dept. of Nuclear Physics.
MECHANICAL PROPERTIES OF THE NEUTRON LATTICE IN PSR 0833-45.
P. B. Jones. 1973, 15p
U.S. Sales Only.

Descriptors: (*Pulsars, *Elasticity), (*Helium 3, Pulsars), Creep, Crystal lattices, Dislocations, Mathematical models, Neutron stars, Neutrons, Quantum mechanics, Solids.

For abstract, see NSA 30 04, number 10762.

4. ATMOSPHERIC SCIENCES

4A. Atmospheric Physics

AD-783 492/2GA PC$3.00/MF$2.25
Army Electronics Command Fort Monmouth N J
APPROXIMATIONS IN INVERTING THE RADIATIVE TRANSFER EQUATION.
Research and development technical rept.,
Louis D. Duncan. Jul 74, 14p Rept no. ECOM-5545

Descriptors: *Atmospheric sounding, *Radiative transfer, Computations, Approximation, Meteorological satellites.
Identifiers: Remote sensing, NOAA-2 satellite.

The paper demonstrates that for wavenumbers used for satellite remote sensing of temperature and for temperature in the range encountered in the atmosphere, the Planck function can be approximated by a Taylor's expansion about a guess temperature with sufficient accuracy obtained after the first derivative term. Moreover, it is shown that the derivative of the Planck function with respect to temperature, T, is approximately equal to .01T-1.3. The approximations are incorporated into an iterative retrieval algorithm to obviate the transcendental functional evaluations usually required in inverting the radiative transfer equation. The resulting procedure provides approximately 80 percent savings in computer time with insignificant loss of accuracy. (Author)

AD-783 512/7GA PC$3.75/MF$2.25
Lockheed Missiles and Space Co Inc Palo Alto Calif Palo Alto Research Lab
INVESTIGATION OF PHENOMENA AFFECTING AURORAL IONOSPHERE.
Final rept. 1 Mar 73-30 Apr 74,
J. B. Cladis, G. T. Davidson, W. E. Francis, L. L. Newkirk, and M. Walt. 9 Jul 74, 70p Rept no. LMSC-D358493 DNA-3327F
Contract DNA001-73-C-0141

Descriptors: *Ionospheric disturbances, *Aurorae, Magnetic storms, Electron density, Ion density, Whistlers, Magnetosphere.
Identifiers: E region.

Rocket data obtained during a magnetic substorm on 16 August 1970 indicates the auroral ionosphere was unstable to the high-frequency, Hall current, two stream instability. This mechanism has been proposed to explain field-aligned ionospheric irregularities. Such irregularities were present during the rocket experiment. According to the theory, certain critical values of electron number density, current density, and relative electron-ion drift velocity must be exceeded for the instability to occur. An analysis is described in which calculated values of these quantities are derived from the rocket measurements of the dc electric field and the precipitating electrons. The results are found to exceed the respective critical values and enforce the conclusion that the field-aligned irregularities were produced by this instability. (Modified author abstract)

AD-783 541/6GA PC$5.50/MF$2.25
Pennsylvania State Univ University Park Ionosphere Research Lab

IONOSONDE UNDERLYING IONIZATION CORRECTION USING IONOSPHERIC MODELS.
Scientific rept.,
Daniel F. Ferriola. 3 Jul 74, 48p Rept no. PSU-IRL-SCI-425E
Contract N00014-67-A-0385-0017, Grant NGL-39-009-003

Descriptors: *Ionosphere, *Electron density, Atmospheric sounding, Diurnal variations, Seasonal variations, Ionization.
Identifiers: *Ionosondes, E region, F1 region.

Ionogram reduction has been hampered for many years by the lack of a virtual height trace at the lower frequencies of the ionogram. The missing lower trace contains information concerning the ionization in the E and F1 region, which is needed to accurately convert the virtual height and frequency profile into a real height and electron-density profile. A method to account for this underlying ionization using ionospheric models is presented and the results compared with other sounding techniques. (Author)

AD-783 909/5GA PC$4.00/MF$2.25
Photometrics Inc Lexington Mass
ANALYSES OF CHEMICAL AND SMOKE RELEASES IN THE ATMOSPHERE.
Final rept. 1 Feb 71-31 Dec 73,
Irving L. Kofsky, Christian A. Trowbridge, and Ronald H. Johnson. 31 Jan 74, 78p Rept no. PhM-104-74 AFCRL-TR-74-0102
Contract F19628-71-C-0018

Descriptors: *Atmospheric sounding, Photointerpretation, Photometry, Tracer studies, Photographic equipment, Transport properties, Turbulence, Calibration, Upper atmosphere, Stratosphere, Brightness, Photographic film, Chemical agents, Smoke, Wind, Diffusion, Atmospheric chemistry, Densitometers, Radiance, Data reduction, Photographic processing, Data processing, Fourier transformation.
Identifiers: Atmospheric diffusion, *Chemical release studies.

A program of analysis of photographic and other optical data on chemical and smoke tracers in the upper atmosphere and stratosphere, whose objective is to study winds, diffusive and turbulent transport, composition, anc chemical reaction processes, is described. Images of the released materials were reduced by microdensitometry, and the films, cameras, and secondary radiance standards were photometrically calibrated. Improved techniques for scanning and Fourier transform analysis of photographically-recorded radiance distributions were developed, and contributions made to the design of systems for daytime imaging and interactive processing of pictorial data. (Author)

AD-783 910/3GA PC$3.25.1.45
University Coll London (England) Dept of Physics and Astronomy
DETERMINATION OF AIR DENSITY, TEMPERATURE AND WINDS AT HIGH ALTITUDE.
Scientific interim rept. 1 Feb 72-31 Jan 74,
Gerald V. Groves. Mar 74, 38p Rept no. Scientific-2 AFCRL-TR-74-0310
Grant AF-AFOSR-2264-72
See also report dated Mar 73, AD-767 396.

Descriptors: *Upper atmosphere, *Thermosphere, Scientific research, Ionosphere, Wind, Atmospheric temperature, Density, Diurnal variations, Seasonal variations, Brazil, Atmospheric density, Atmospheric circulation, Optical radar, Troposphere, Great Britain, Stratosphere.
Identifiers: Remote sensing.

The report contains two papers dealing with oscillations of the upper atmosphere and their interpretation: (1) Propagating modes of the 24-hourly atmospheric tide derived from Natal (5.9 degrees S) grenade experiments and global barometric oscillations, and (2) An analysis of grenade-experiment winds and temperatures at Natal (6 degrees S) for diurnal and seasonal components. (Modified author abstract)

COO-2195-13 PC$4.00/MF$2.25
Massachusetts Inst. of Tech., Cambridge Dept. of Meteorology.
PLANETARY TRANSPORT PROCESSES IN THE UPPER ATMOSPHERE. ANNUAL PROGRESS REPORT.
R. E. Newell. 20 Mar 74, 18p
Contract AT(11-1)-2195

Descriptors: (*Troposphere, *Motion), (*Stratosphere, Motion), (*Earth atmosphere, Motion), Climates, Clouds, Desulfurization, Flue gas, Kinetics, Meteorology, Particles, Sulfur, Transport, Volcanoes.

For abstract, see NSA 30 04, number 12175.

4B. Meteorology

AD-783 468/2GA PC$3.25/MF$2.25
Army Electronics Command, White Sands Missile Range, N. Mex. Atmospheric Sciences Lab.
12810 LANCE, MISSILE NO. 2172, ROUND NO. 228 ECT (13 JUNE 1974).
Meteorological data rept.
Jun 74, 41p DR-845

Descriptors: *Meteorol ogical data, *Upper atmosphere, *Impact prediction, Sounding rockets, Guided missile ranges, Atmospheric temperature, Barometric pressure, Wind, Exterior ballistics, Cloud cover, Humidity, Atmospheric density, Tables(Data), New Mexico.
Identifiers: Lance missiles, Missile modification.

Meteorological data gathered for the launching of 12810 Lance, Missile Number 2172, Round Number 228 ECT, are presented in tabular form. (Author)

AD-783 469/0GA PC$3.00/MF$2.25
Army Electronics Command, White Sands Missile Range, N. Mex. Atmospheric Sciences Lab.
16101 LITTLE JOHN, MISSILE NO. 3088, ROUND NO. 713 RD (14 JUNE 1974).
Meteoroligical data rept.
Jun 74, 16p DR-846

Descriptors: *Meteorological data, *Upper atmosphere, *Impact prediction, Artillery rockets, Guided missile ranges, Atmospheric temperature, Barometric pressure, Wind, Exterior ballistics, Cloud cover, Humidity, Atmospheric density, Tables(Data), New Mexico.
Identifiers: Little John.

Meteorological data gathered for the launching of 16101 Little John, Missile Number 3088, Round Number 713 RD, are presented in tabular form. (Author)

AD-783 470/8GA PC$3.00/MF$2.25
Army Electronics Command White Sands Missile Range N Mex Atmospheric Sciences Lab
16101 LITTLE JOHN, MISSILE NO. 3094, ROUND NO. 714 RM (19 JUNE 1974).
Meteorological data rept.
Jun 74, 16p Rept no. DR-847

Descriptors: *Meteorological data, *Upper atmosphere, *Impact prediction, Artillery rockets, Guided missile ranges, Atmospheric temperature, Barometric pressure, Wind, Exterior ballistics, Cloud cover, Humidity, Atmospheric density, Tables(Data), New Mexico.
Identifiers: Little John.

Meteorological data gathered for the launching of 16101 Little John, Missile Number 3094, Round Number 714 RM, are presented in tabular form. (Author)

AD-783 471/6GA PC$3.25/MF$2.25
Army Electronics Command White Sands Missile Range N Mex Atmospheric Sciences Lab
12811 LANCE, MISSILE NO. 2173, ROUND NO. 229 ECT (21 JUNE 1974).
Meteorological data rept.
Jun 74, 47p Rept no. DR-848

Descriptors: *Meteorological data, *Upper atmosphere, *Impact prediction, Sounding rockets, Guided missile ranges, Atmospheric temperature, Barometric pressure, Wind, Exterior ballistics, Cloud cover, Humidity, Atmospheric density, Tables(Data), New Mexico.
Identifiers: Lance missiles, Missile modification.

Meteorological data gathered for the launching of 12811 Lance, Missile Number 2173, Round Number 229 ECT. are presented in tabular form. (Author)

AD-783 472/4GA PC$3.00/MF$2.25
Army Electronics Command White Sands Missile Range N Mex Atmospheric Sciences Lab
16301 LITTLE JOHN MISSILE NO. 3194, ROUND NO. 715 RM (27 JUNE 1974).
Meteorological data rept.
Jun 74, 17p Rept no. DR-849

Descriptors: *Meteorological data, *Upper atmosphere, *Impact prediction, Artillery rockets, Guided missile ranges, Atmospheric temperature, Barometric pressure, Wind, Exterior ballistics, Cloud cover, Humidity, Atmospheric density, Tables(Data), New Mexico.
Identifiers: Little John.

Meteorological data gathered for the launching of 16301 Little John, Missile Number 3194, Round Number 714 RM, are presented in tabular form. (Author)

AD-783 473/2GA PC$3.25/MF$2.25
Army Electronics Command White Sands Missile Range N Mex Atmospheric Sciences Lab
12811 LANCE, MISSILE NO. 2242, ROUND NO. 230 ECL (28 JUNE 1974).
Meteorological data rept.
Jun 74, 42p Rept no. DR-850

Descriptors: *Meteorological data, *Upper atmosphere, *Impact prediction, Sounding rockets, Guided missile ranges, Atmospheric temperature, Barometric pressure, Wind, Exterior ballistics, Cloud cover, Humidity, Atmospheric density, Tables(Data), New Mexico.
Identifiers: Lance missiles, Missile modification.

Meteorological data gathered for the launching of 12811 Lance, Missile Number 2242, Round Number 230 ECL, are presented in tabular form. (Author)

AD-783 474/0GA PC$3.25/MF$2.25
Army Electronics Command White Sands Missile Range N Mex Atmospheric Sciences Lab
14810A LANCE, MISSILE NOS. 2559/2561, ROUND NOS. 231 APT/232 APT (11 JULY 1974).
Meteorological data rept.
Jul 74, 35p Rept no. DR-851

Descriptors: *Meteorological data, *Upper atmosphere, *Impact prediction, Sounding rockets, Guided missile ranges, Atmospheric temperature, Barometric pressure, Wind, Exterior ballistics, Cloud cover, Humidity, Atmospheric density, Tables(Data), New Mexico.
Identifiers: Lance missiles, Missile modification.

Meteorological data gathered for the launching of 14810A Lance, Missile Numbers 2559/2561, Round Numbers 231 APT/232 APT, are presented in tabular form. (Author)

AD-783 475/7GA PC$3.75/MF$2.25
Army Electronics Command White Sands Missile Range N Mex Atmospheric Sciences Lab

12813A LANCE, MISSILE NO. 2189, ROUND NO. 233 ECL (12 JULY 1974).
Meteorological data rept.
Jul 74, 54p Rept no. DR-852

Descriptors: *Meteorological data, *Upper atmosphere, *Impact prediction, Sounding rockets, Guided missile ranges, Atmospheric temperature, Barometric pressure, Wind, Exterior ballistics, Cloud cover, Humidity, Atmospheric density, Tables(Data), New Mexico.
Identifiers: Lance missiles, Missile modification.

Meteorological data gathered for the launching of 12813A Lance, Missile Number 2189, Round Number 233 ECL, are presented in tabular form. (Author)

AD-783 476/5GA PC$3.25/MF$2.25
Army Electronics Command White Sands Missile Range N Mex Atmospheric Sciences Lab
12808 LANCE, MISSILE NO. 2212, ROUND NO. 235 APT (18 JULY 1974).
Meteorological data rept.
Jul 74, 49p Rept no. DR-854

Descriptors: *Meteorological data, *Upper atmosphere, *Impact prediction, Sounding rockets, Guided missile ranges, Atmospheric temperature, Barometric pressure, Wind, Exterior ballistics, Cloud cover, Humidity, Atmospheric density, Tables(Data), New Mexico.
Identifiers: Lance missiles, Missile modification.

Meteorological data gathered for the launching of 12808 Lance, Missile Number 2212, Round Number 235 APT, are presented in tabular form. (Author)

AD-783 491/4GA PC$3.00/MF$2.25
Army Electronics Command Fort Monmouth N J
ON INCREASING VERTICAL EFFICIENCY OF A PASSIVE BALLOON TRACKING DEVICE BY OPTIMAL CHOICE OF RELEASE POINT.
Research and development technical rept.,
Walter B. Miller, and Donald R. Veazey. Jun 74, 19p Rept no. ECOM-5543

Descriptors: *Meteorological balloons, *Tracking, Trajectories, Radiosondes, Efficiency, Numerical analysis, Wind velocity, Errors.
Identifiers: AN/GMD-1B.

For a rawinsonde employing the AN/GMD-1B rawinset, it is shown that ability to supply vertical wind velocity profiles is dependent on balloon release point. For the family of balloon trajectories considered, as horizontal wind speed increases, gains in system performance by optimal choice of release point become of increasing significance. The analysis and results presented are based on the form of isovariant surfaces for a family of estimators of horizontal balloon displacement derived from fundamental system observables. (Modified author abstract)

AD-783 493/0GA PC$3.25/MF$2.25
Army Electronics Command Fort Monmouth N J
EVALUATION OF A LASER CROSSWIND SYSTEM.
Research and development technical rept.,
Thomas H. Pries, and Erick T. Young. Jul 74, 38p Rept no. ECOM-5546

Descriptors: *Gas lasers, *Wind direction indicators, Optical detection, Measuring instruments, Remote detectors, Atmospheric disturbances, Temperature measuring instruments, Anemometers, Intensity, Refractive index.
Identifiers: Remote sensing, Helium neon lasers.

The theory for an optical device to measure horizontal winds transverse to a path is reviewed. A system based on this theory which senses the wind-blown optical turbulence in the air is described. Experimental evaluation of this crosswind sensor using comparisons between the optically determined winds and mechanical anemometer measurements are discussed. Excellent similarity in the readings was found for a variety of atmospheric conditions. (Author)

AD-783 510/1GA PC$4.00/MF$2.25
Rand Corp Santa Monica Calif
A NUMERICAL EXPERIMENT ON THE EFFECTS OF REGIONAL ATMOSPHERIC POLLUTION ON GLOBAL CLIMATE,
L. Randall Koenig. Jun 74, 92p Rept no. R-1429-ARPA
Contract DAHC15-73-C-0181, ARPA Order-189-1

Descriptors: *Climate, *Air pollution, *Aerosols, *Atmosphere models, Circulation, Global, Mathematical models, Atmospheric temperature, Wind, Solar radiation, Condensation nuclei, Rainfall, Cloud cover, Convergence, Correlation techniques, North America, South America.
Identifiers: Greenhouse effect.

The report describes the use a global atmospheric general circulation model to investigate the change in climate caused by the introduction of high concentrations of hygroscopic aerosols into a limited region--roughly, North America. It was postulated that the aerosols would serve as condensation nuclei at lower relative humidity than natural aerosols. The experiment was run simulating 60 days. Values of meteorological properties during this period were compared with those obtained by a control simulation in which the polluted region was absent.

AD-783 535/8GA PC$3.25/MF$2.25
Woods Hole Oceanographic Institution Mass
A BUOY-MOUNTED METEOROLOGICAL RECORDING PACKAGE.
Technical rept.,
Richard E. Payne. Jun 74, 37p Rept no. WHOI-74-40
Contract N00014-66-C-0241
Sponsored in part by North Atlantic Treaty Organization, Brussels (Belgium).

Descriptors: *Meteorological instruments, *Mooring buoys, Wind velocity, Wind direction, Sea water, Temperature, Atmospheric temperature, Humidity, Solar radiation, Heat flux, Air water interactions, Experimental data, Performance(Engineering).
Identifiers: Design, Joint air sea interaction experiment.

The design and operation of a buoy-mounted meteorological sensing and recording package are described. The package is based on the Vector Averaging Current Meter (VACM) and includes sensors for wind speed and direction, water temperature, air temperature, solar radiation, barometric pressure, and relative humidity. Also covered are the performance of the package during the Joint Air Sea Interaction (JASIN) experiment and an analysis of the heat fluxes calculated from data from the meteorological package and from the three ships involved in the experiment. (Author)

AD-783 547/3GA PC$7.50/MF$2.25
Earth Satellite Corp Washington D C
THE APPLICATION OF THE NIMBUS 5 ESMR TO SEA SURFACE WIND DETERMINATION.
Interim rept. 2 Apr 73-14 Apr 74,
Romeo R. Sabatini. May 74, 86p EPRF-TR-5-74(ESC)
Contract N66314-73-C-1572

Descriptors: *Sea states, *Ocean surface, *Wind velocity, *Mediterranean Sea, Microwaves, Radiometers, Air water interactions, Meteorological satellites, Statistical analysis, Brightness.
Identifiers: Nimbus 5 satellite, ESSA-8 satellite, Spaceborne photography.

The study explores the relationship between the brightness temperatures (T sub B) measured by the Nimbus 5 Electrically Scanning Radiometer (ESMR) and sea surface winds. A relationship between wind and sea surface emissivity is empirically derived from analyses of wind and (T sub B) in the Mistral area of the Mediterranean Sea. As a result of solving the microwave radiation transfer equation for many model atmospheres and surface conditions, the effects of sea surface temperature, emissivity, and atmospheric water are combined into a simple equation which predicts sea surface winds from ESMR T sub B's. (Modified author abstract)

AD-783 558/0GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
THE PROBLEM OF THE STATISTICAL STRUCTURE OF THE GEOPOTENTIAL FIELD IN TROPICAL LATITUDES,
K. M. Lugina. 3 Jul 74, 16p Rept no. FTD-HC-23-2165-74
Edited trans. of Glavnaya Geofizicheskaya Observatoriya, Leningrad. Trudy (USSR) n308 p166-176 1973.

Descriptors: *Weather forecasting, Statistical analysis, Seasonal variations, Correlation techniques, Translations, USSR.

The present article is an attempt to calculate the spatial correlation function of the geopotential of an isobaric surface at 500 mB for three winter months (December, January, February).

AD-783 559/8GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
ON THE EFFECT OF ERRORS IN THE INITIAL DATA ON FORECASTING WITH THE NONLINEAR SPECTRAL MODEL OF THE ATMOSPHERE,
I. G. Beil, and S. A. Mashkovich. 5 Jul 74, 21p
Rept no. FTD-HC-23-2098-74
Edited trans. of Gidrometeorologicheskii Nauchno-Issledovatelskii Tsentr SSSR. Trudy, n100 p3-16 1972.

Descriptors: *Weather forecasting, Numerical analysis, Atmosphere models, Meteorological data, Correlation techniques, Translations, USSR.

AD-783 580/4GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
PARAMETRIZATION OF CALCULATING NON-ADIABATIC FACTORS IN THE SPECTRAL PREDICTION MODEL,
E. D. Blinkova. 5 Jul 74, 24p Rept no. FTD-HC-23-2099-74
Edited trans. of Gidrometeorologicheskii Nauchno-Issledovatelskii Tsentr SSSR. Trudy, n100 p17-34 1972.

Descriptors: *Atmospheric motion, Mathematical prediction, Partial differential equations, Hydrodynamics, Translations, USSR, Atmosphere models.

Non-adiabatic factors, related to radiative heat transfer, phase transitions of water and turbulent mixing, have an appreciable effect on the development and maintenance of atmospheric motion. A rather simple method of parametrization of non-adiabatic factors, undertaken on the basis of the spectral prediction model, is outlined in the investigation.

AD-783 664/6GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
DUST STORMS IN THE ALTAY TERRITORY,
S. L Kukis. 25 Apr 74, 14p Rept no. FSTC-HT-23-0414-74
Trans. of Meteorologiya i Gidrologiya (USSR) n12 p74-79 1968.

Descriptors: *Dust storms, Distribution, Wind velocity, Diurnal variations, Soil erosion, Translations, USSR.

A study of dust storms in the Altay territory shows that there has been an increase over recent years. Apart from becoming more frequent, these storms are now lasting longer. In order to prevent the complete erosion of fertile soil, afforestation should be carried out to minimize the effects of the wind. (Author)

AD-783 666/1GA PC$6.50/MF$2.25
Naval Postgraduate School Monterey Calif
SPECTRUM ANALYSIS OF TROPICAL WAVES IN THE INDIAN OCEAN.
Master's thesis,
Jonathan Thomas Malay. Jun 74, 68p

Descriptors: *Atmospheric motion, Meteorological phenomena, Troposphere, Marine meteorology, Spectrum analysis, Radiosondes, Time series analysis, Wind, Atmospheric temperature, Seasonal variations, Theses, Indian Ocean.

An attempt has been made to identify tropical waves with periods less than 20 days in the Indian Ocean by spectrum analysis of radiosonde data for five stations, widely scattered over the Indian Ocean area. The data used is for the period from January to September, 1973, which was further divided into five-month seasons, overlapping in May due to consideration of the monsoonal shift in the mean flow. Three spectral peaks in the 10-17 day, 6-7 day and 4-5 day ranges have been detected. Cross-spectrum analysis reveals a basically in-phase structure in the vertical in the lower troposphere and reversed phase at upper levels. (Modified author abstract)

AD-783 743/8GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
CHANGE IN THE INTENSITY OF ARTIFICIAL PRECIPITATION IN TIME WITH FRONTAL CLOUD MODIFICATIONS,
B. N. Leskov. 11 Jul 74, 19p Rept no. FTD-MT-24-1142-74
Edited machine trans. of Ukrainskii Nauchno-Issledovatelskii Gidrometeorologicheskii Institut. Trudy (USSR) n99 p41-51 1971, by Rene E. Courville.

Descriptors: *Artificial precipitation, *Cloud seeding, Weather modification, Intensity, Numerical analysis, Translations, USSR.

In the report primary attention is given to studying the radar parameters of trails of artificial precipitation obtained from one line of seeding. The investigations made it possible to draw a number of important conclusions for the procedure of isolating the areas of intensified precipitation on the earth's surface and for confirmation of the fact of an increase in precipitation itself.

AD-783 922/8GA PC$3.75/MF$2.25
Rand Corp Santa Monica Calif
NUMERICAL EXPERIMENTS ON THE COMPUTATION OF GROUND SURFACE TEMPERATURE IN AN ATMOSPHERIC CIRCULATION MODEL.
Interim rept.,
Chandrakant M. Bhumralkar. May 74, 62p Rept no. R-1511-ARPA
Contract DAHC15-73-C-0181, ARPA Order-189-1

Descriptors: *Atmospheric circulation, Ground level, Surface temperature, Soils, Heat flux, Diurnal variations, Computations, Atmosphere models, Atmospheric temperature.

The report examines the computation of ground surface temperature in the Rand two-level general circulation model with specific reference to the inclusion of soil heat flux. Comparative results of various numerical integrations are presented to determine the most realistic technique for the computation of the ground surface temperature. It is hoped that this discussion will contribute to the improvement of the accuracy of computed ground surface temperature in the simulation of climatic changes.

ARLV-351-45 PC$4.00/MF$2.25
Environmental Science Services Administration, Las Vegas, Nev. Air Resources Lab.
VERIFICATION OF A MESOSCALE WIND-PREDICTION MODEL DERIVED FROM A HORIZONTAL VORTICITY THEOREM.
J. S. Cornett, and D. Randerson. 1973, 6p CONF-740328-1

Descriptors: (*Wind, *Turbulence), (*Earth atmosphere, *Aerodynamics), Air pollution, Mathematical models, Meteorology, Surface air, Weather.

For abstract, see NSA 30 04, number 12094.

COM-74-11333/3GA PC$3.00/MF$2.25
National Environmental Satellite Service, Washington, D.C. Satellite Field Services Station.
WHAT ARE YOU LOOKING AT WHEN YOU SAY THIS AREA IS A SUSPECT AREA FOR SEVERE WEATHER.
Technical memo.,
Arthur H. Smith, Jr. Feb 74, 21p NOAA-TM-NESS-56 NOAA-74061208

Descriptors: *Tornadoes, *Weather forecasting, Meteorological satellites, Spaceborne photography.
Identifiers: ATS-3 satellite.

The memorandum is a summary of the activities of the Satellite Field Service Station (SFSS) at Washington, D.C., in connection with the tornado watch of Sunday, May 20, 1973. The procedures used by the SFSS meteorologist in analyzing satellite photographs and issuing satellite narratives relating to the area of suspected severe weather activity are described in detail. The actual Applied Technology Satellite 3 pictures used, the SFSS activity log, and the Satellite narrative messages issued are presented as an illustration of SFSS procedures during a potential or actual severe weather situation.

COM-74-11369/7GA PC$8.00/MF$2.25
Colorado State Univ., Fort Collins. Dept. of Atmospheric Science.
ANALYSIS OF SATELLITE-OBSERVED TROPICAL CLOUD CLUSTERS.
Atmospheric science paper,
Eberhard Ruprecht, and William M. Gray. May 74, 96p AS-Paper-219 NOAA-74062706
Grant NOAA-04-3-158-51

Descriptors: *Weather forecasting, *Clouds(Meteorology), *Tropical regions, Cumulus clouds, Convection, Ocean environments, Meteorological satellites, Wind(Meteorology), Atmospheric temperature, Precipitation(Meteorology), Vortices, Pacific Ocean, West Indies, Spaceborne photography.

Composited Northern Hemispheric Data Tabulation rawinsonde data has been gathered relative to three satellite-observed tropical weather systems in the Western Pacific and in the West Indies. These systems include the approximately 4 degrees wide cloud cluster, the cloud cluster environment (approximately 2-6 degrees latitude around the cluster center), and the clear region. Information is presented for the years 1967 and 1968. Composited information is presented on individual weather system winds, divergence, vorticity, temperature, humidity, rainfall, diurnal variations, etc. The dynamic mechanisms, CISK and barotropic instability, are discussed. The mean cloud cluster vorticity budget is calculated. Significant differences exist between the Western Pacific and the West Indies weather systems. (Modified author abstract)

COM-74-11370/5GA PC$6.00/MF$2.25
National Climatic Center, Asheville, N.C.
CLIMATIC DATA REPORT, SOUTHEASTERN SNOWSTORM, FEBRUARY 8-11, 1973.
Technical memo.,
William T. Hodge. May 73, 57p NOAA-TM-EDS-NCC-2 NOAA-74070309

Descriptors: *Snowstorms, *United States, Atmospheric temperature, Snowfall, Sleet, Damage, Spacebourne photography, Marine meteorology, Meteorological satellites.
Identifiers: NOAA-2 satellite, ATS-3 satellite.

The snow storm that crossed the Southeastern states from February 8 to February 11 brought never-before-heard-of amounts of snow to parts of Alabama, Georgia, South Carolina, and North Carolina. In other areas from Texas to Virginia, it stopped traffic, crippled communications, damaged buildings and killed trees and other plants. Along coasts it eroded beaches, undermined and washed away buildings, and damaged piers. It exhibited the features of a true winter storm in a part of the country that seldom sees such drastic weather: Sharply falling temperatures, freezing rain, ice pellets (sleet) and heavy snow. The report includes a discussion on the meteorology of this storm, information on the storm effects in each of the states and at sea.

COM-74-11400/0GA PC$3.00/MF$2.25
Nevada Univ., Reno. Desert Research Inst.
PRODUCTION AND ELECTRIFICATION OF SATELLITE PARTICLES RESULTING FROM CLOUD AND RAIN DROP IMPACTIONS ON GRAUPEL PARTICLES AND HAILSTONES.
Final rept.,
John Hallett, and Larry Christensen. Apr 74, 12p NOAA-74071715
Grant NOAA-N22-170-72(G)

Descriptors: *Raindrops, *Particle size distribution, *Photographic techniques, Drops(Liquids), Impact tests, Surfaces, Wind tunnels, Clouds(Meteorology).
Identifiers: Drop photography, Strobe techniques, Hailstones.

A new technique was developed for drop photography using a double strobe technique. Two strobes with extra capacitors were placed symmetrically on each side of the tunnel with two parallel part silvered optical flats at 45 degrees. With time delay between flashes of approximately 10 micrometer sec each drop focused the flash and its reflection to give four spots; the lateral distance giving drop size, the vertical distance drop velocity. This technique could be used effectively for drop diameter lower than 100 micrometers. In the case of drops moving laterally, the velocity component in the plane perpendicular to the direction of viewing could be determined. Extension of range was accomplished by improvement of wind tunnel design to give maximum velocity of 60 m/sec. Splashing criteria were investigated for different surfaces with a spread of about 15% in velocity; a rough glass surface lead to splash at lower velocity than a smooth surface. In contrast a deformable surface such as a light grease required a 5% large velocity to cause splashing.

COM-74-11405/9GA PC$3.25/MF$2.25
Chicago Univ., Ill. Lab. for Atmospheric Probing.
RADAR STUDY OF EVAPORATING ICE CRYSTAL CLOUDS.
Final rept.,
F. Ian Harris. Jun 74, 31p NOAA-7407117
Grant NOAA-N22-127-72(G)

Descriptors: *Cloud physics, *Ice, *Evaporation, Atmospheric motion, Radiosondes, Doppler radar, Mathematical models, Temperature gradients, Divergence.
Identifiers: Ice crystal clouds.

Preliminary results of the analysis of NSSL radar and radiosonde data are presented. From three

sets of data, there appear to be certain characteristics which typify and evaporating ice cloud layer. Soundings through these clouds yield a moist layer for most of the cloud depth with a very low relative humidity layer in the base region and below. A stable layer, at least isothermal, of the order of 10's of meters in depth characterizes the extreme top of the dry layer. Another characteristic feature is the sharp vertical gradients of reflectivity factor at the base. Both this gradient and the stable temperature gradient can be explained by evaporation of the ice crystals falling into the dry layer. The evaporation of ice crystals has been simulated in a numerical model and this model predicts reflectivity gradients similar to those observed, as well as a shallow stable layer at the top of the evaporative layer.

COM-74-11407/5GA PC$5.00/MF$2.25
National Weather Service, Salt Lake City, Utah. Western Region.
AN OPERATIONAL EVALUATION OF 500-MB TYPE STRATIFIED REGRESSION EQUATIONS.
Technical memo.,
Alexander E. MacDonald. Jun 74, 36p NOAA-TM-NWS-WR-93 NOAA-74080108

Descriptors: *Precipitation(Meteorology), *Weather forecasting, Mathematical prediction, Probability theory, Dew point, Regression analysis, Data processing.

A test of the operational utility of the 500-mb type stratified regression equations developed by Paegle and Kierulff (1) is presented. It is found that in development of .he equations, there were three major data disrepancies. These discrepancies, which qualitatively do not affect Paegle's and Kierulff's results or detract from their conclusions, do have a bearing on the operational usability of the equations--they are: (1) the threshold value of precipitation actually used was .02 inches rather than .01 inches, (2) the precipitation data valid period was 12 hours earlier than has been thought, and (3) the 700-mb and 500-mb dew-point depression fields used in screening were erroneous. A two-year test on independent data (December 68-February 69, December 69-February 70) is presented which indicates the regression equations improve on climatology by about 7%. (Modified author abstract)

COM-74-11413/3GA PC$3.75/MF$2.25
Rosenstiel School of Marine and Atmospheric Science, Miami, Fla.
RADAR PARAMETERS FOR NOAA AIRCRAFT AND IMPROVING THE RADAR HURRICANE PRECIPITATION MODEL.
Final rept.,
Feb 74, 59p UM-RSMAS-74007 NOAA-74071904
Grant NOAA-03-3-022-90
Previously announced as rept. no. N74-27082.

Descriptors: *Hurricanes, *Precipitation(Meteorology), Meteorological radar, Rain, Meteorological data, Radar equipment, Video tapes, Attenuation, Radar cross sections, Models.

Several methods are explored in attempting to use quantized showery summer precipitation radar data to improve the estimates of radar precipitation data obtained years ago in hurricanes using one or more IEC levels. It is shown that while echo size does not seem to be related to echo intensity, the areas of light to moderate rain rates bear a constant relationship to each other. The data necessary to extend the system to higher rates are not abundant enough, nor is the reliability of the rainrate estimates great enough to warrant their use on hurricane data. The further complicating effects of beam-filling and attenuation, even at 10-cm wavelengths, are shown, both as they might be used in the correction of past data and as they complicate the formulation of specifications for a new generation of airborne research radar equipment. (Modified author abstract)

COM-74-11415/8GA PC$3.75/MF$2.25
Oklahoma Univ., Norman. School of Aerospace, Mechanical and Nuclear Engineering.
ON LABORATORY SIMULATION OF TORNADO-LIKE VORTICES.
Final rept.,
M. C. Jischke, and M. Parang. Jun 74, 72p NOAA-74071716
Grant NOAA-N22-200-72(G)

Descriptors: *Tornadoes, *Vortices, Flow distribution, Simulation, Pitot tubes, Measurement.

In the analysis of laboratory simulation of tornado-like vortices consideration is given to the variation of core size with imposed swirl, multiplex vortex formation, and measurements were made to develop quantitative information on the nature of the flow field. An appendix presents finds on the independence of swirl and exhaust controls.

COM-74-11422/4GA PC$3.25/MF$2.25
Saint Louis Univ., Mo. Dept. of Earth and Atmospheric Sciences.
AN ITERATIVE INITIALIZATION SCHEME FOR MESOSCALE STUDIES,
Gandikota V. Rao, and Jack Fishman. May 74, 37p NOAA-74071714
Grant NOAA-04-3-022-35, NSF-GA-26029

Descriptors: *Wind(Meteorology), *Weather forecasting, Mathematical models, Storms, Equations of motion, Data processing.
Identifiers: Mesoscale forecasting.

An iterative technique to produce an initial set of consistent meteorological variables on a mesoscale basis is constructed. The development follows closely the earlier pioneering study of Miyakoda and Moyer (1968) who examined the feasibility of such a technique for synoptic acale initialization using the linearized barotropic equations. The proposed scheme, on the other hand, employs the primitive equations of motion and emphasizes the three-dimensional structure. Another difference is the employment of a staggered grid which greatly facilitated the finite difference forms of the Laplacians and minimized some of the problems encountered in the earlier work. The structure of the various mesosystems, the horizontal and vertical subsynoptic circulations are studied. (Modified author abstract)

COM-74-11424/0GA PC$10.25/MF$2.25
Weather Bureau, Washington, D.C.
CHARACTERISTICS OF THE HURRICANE STORM SURGE.
Technical paper,
D. Lee Harris. 1963, 145p USDC/WB/TP-48 NOAA-74073004

Descriptors: *Hurricanes, *Storm surges, Floods, Meteorological data, Sea level, Coasts, Mathematical models, Rainfall, Tides, Abnormalities.

The report begins with a discussion of the principal characteristics of the coastal flooding produced by hurricanes and of the physical processes which are believed to account for the observations. This is followed by a discussion of the assembled data, the methods used in processing the data, and the resulting uncertainties in the final figures. The assembled data from a number of the best documented hurricane storm surge cases are presented in Part Two of the report.

COM-74-11425/7GA PC$3.00/MF$2.25
National Oceanic and Atmospheric Administration, Washington, D.C. Center for Experimental Design and Data Analysis.
METHOD FOR OBTAINING WET-BULB TEMPERATURES BY MODIFYING THE PSYCHROMETRIC FORMULA.
Technical memo.,
J. Sullivan, and L. D. Sanders. Jun 74, 12p NOAA-TM-EDS-BOMAP-11 NOAA-74072607

Descriptors: *Humidity, *Meteorological data, Data processing, Atmospheric temperature, Measurement.
Identifiers: Barbados oceanographic and meteorological experiment, Psychrometric formula.

In computer processing of shipboard data obtained during the Barbados Oceanographic and Meteorological Experiment (BOMEX), conducted in 1969, values of the wet-bulb temperature had to be obtained from the known dry-bulb temperatures and relative humidities. This cannot be done by the usual algebraic process of solving a polynomial equation, and an algorithm was therefore developed to approximate the psychrometric formula by a polyal equation. For the BOMEX data, the algorithm gave wet-bulb temperatures that were consistent within plus or minus 0.01C with the input values of dry-bulb temperature, relative humidity, and pressure. The algorithm is also accurate for a wider range of meteorological variables, and can be applied to other non-polynomial equations.

COM-74-90018-03-04/GA
(Order as COM-74-90018-03)
National Oceanic and Atmospheric Administration, Washington, D.C. Environmental Data Service.
GREAT LAKES NAVIGATION SEASON, 1973,
Elwyn E. Wilson. 1974, 11p NOAA-74060501-4
Included in Mariners Weather Log, v18 n3 p154-163 May 74, COM-74-90018-03.

Descriptors: *Meteorological data, *Great Lakes, *Navigation, Storms, Floods, Erie Lake, Saint Clair Lake, Saint Lawrence Seaway, Welland Canal, Precipitation(Meteorology), Ice reporting.

The 1973-74 Great Lakes navigation season opened on March 28, 1973, when the Soo Locks opened, the earliest ever. The 1973 navigation season closed on the St. Lawrence Seaway on December 22 and on the Welland Canal on January 4, 1974. Information is given on the ice season, the Great Lakes Vessel observation program, and on notable weather happenings each month.

COO-2368-1 PC$7.00/MF$2.25
Illinois Univ., Urbana.
RAINFALL VARIATIONS ALONG RAY PATHS. FINAL REPORT, JULY 1, 1973--FEBRUARY 28, 1974.
R. Cataneo, and R. G. Semonin. 1974, 78p
Contract AT(11-1)-2368

Descriptors: (*Rain, *Variations), Distribution, Droplets, Florida, Measuring instruments, Meteorology, Radar, Spatial distribution, Spectrometers, Velocity.

For abstract, see NSA 30 04, number 12122.

KFK-1918 PC$4.75/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Abt. Strahlenschutz und Sicherheit.
EXPERIMENTS CONDUCTED AT THE KARLSRUHE NUCLEAR RESEARCH CENTER TO DETERMINE DIFFUSION IN THE ATMOSPHERE BY MEANS OF VARIOUS TRACERS.
L. A. Koenig, K. Nester, H. Schuettelkopf, and M. Winter. Nov 73, 32p CONF-731110-8
In German. U.S. Sales Only.

Descriptors: (*Earth atmosphere, *Diffusion), Carbon tetrachloride, Kernforschungszentrum karlsruhe, Radiation protection, Tracer techniques, Tritium, Water vapor.

For abstract, see NSA 30 04, number 09563.

KFK-1934 PC$4.50/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany).

ON-LINE DATA ACQUISITION AND DATA PROCESSING IN A METEOROLOGICAL TOWER--PDP-8/I--CALAS SYSTEM COUPLING.
F. Suess, and P. Thomas. Feb 74, 29p
In German. U.S. Sales Only.

Descriptors: (*Meteorology, *Data acquisition), (*Kernforschungszentrum karlsruhe, Meteorology), Computers, Data processing, Data transmission, German federal republic, Measuring methods, Recording systems.

For abstract, see NSA 30 05, number 12711.

ORNL-TM-4564 PC$4.50/MF$2.25
Oak Ridge National Lab., Tenn.
CALCULATING THE DAILY VARIATIONS OF SOLAR ENERGY INCIDENT ON FLAT PLATES.
R. W. Derby. May 74, 29p
Contract W-7405-eng-26

Descriptors: (*Solar radiation, *Daily variations), Angular distribution, Flat plate collectors, Orientation, Seasonal variations.

For abstract, see NSA 30 05, number 14696.

SLA-74-134 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.; Sandia Labs., Livermore, Calif.
MINICOMPUTER-CONTROLLED LIGHTNING EARLY WARNING/METEOROLOGICAL SYSTEM.
W. W. Shurtleff. Apr 74, 19p

Descriptors: (*Lightning, *Safety), Computers, Control, Data acquisition, Data processing, Display devices, Earth atmosphere, Equipment protection devices, Explosives, Meteorology, Projectiles.

For abstract, see NSA 30 04, number 12193.

5. BEHAVIORAL AND SOCIAL SCIENCES

5A. Administration and Management

AD-783 733/9GA PC$4.75/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
TRANSFER OF SCIENTIFIC AND TECHNICAL INFORMATION FROM SCIENCE TO PRODUCTION (A METHODOLOGICAL ANALYSIS),
A. D. Ursul, and K. V. Kazantseva. 9 Apr 74, 35p
Rept no. FSTC-HT-23-602-74
Trans. of Nauchno-Tekhnicheskaya Informatsiya. Seriya II: Informatsionnye Protessy i Sistemy (USSR) n4 p3-10 1972.

Descriptors: *Technology, *Scientific research, *Industrial production, Translations, USSR.
Identifiers: *Technology transfer, *Technology utilization.

The scope of the establishing of science as a direct productive force (DPF) is historically traced. The scientization of production is presented graphically. Information is discussed as constituting the main content of the modern scientific-technical revolution, namely scientific-technical information as contrasted with empirical or artisan information.

AD-783 782/6GA PC$9.00/MF$2.25
Naval Postgraduate School Monterey Calif
MANAGEMENT OF U. S. NAVY CRYPTOLOGIC RESOURCES USING MANAGEMENT BY OBJECTIVES.
Master's thesis,
Paul Ernest Hargrave. Jun 74, 120p

Descriptors: *Management planning and control, *Cryptography, Management, Navy, Theses.
Identifiers: *Management by objectives.

The thesis is a study of the management process of Management by Objectives and its use as a method for management of U. S. Navy cryptologic resources at the U. S. Naval Security Group Command Headquarters. The thesis is designed to encourage the manager to use management by objectives from the standpoint of a four-phase process, Objective Development, Objective Setting, Implementation of Action and Control and Reporting. Methods and techniques to assist the manager in carrying out this four-phase process have been discussed and included. This study has produced a system that managers within the Naval Security Group Headquarters could use as a basis for installing Management by Objectives. (Author)

AD-783 801/4GA PC$7.75/MF$2.25
Army War Coll Carlisle Barracks Pa
IMPROVING RESEARCH AND DEVELOPMENT DECISION-MAKING FOR THE USER.
Individual research project,
Myron J. Longmore. 28 May 74, 92p

Descriptors: *Army research, *Research management, *Decision making, Surveys, Efficiency, Military organizations, Military personnel.

The study examines the research and development management and decisionmaking process of the Department of the Army. Based on the author's experiences, personal interviews and a survey, a determination was made that the management and decisionmaking process in TRADOC needs improvement in the areas of responsiveness and project stability. The primary causes of the unresponsiveness and project vacillation were attributed to rapid of personnel and to the large number of staff organizations and suborganizations that each action must go through before a position was established. The recommendations are that Department of the Army designate user project managers (MSs) from TRADOC assets for major material systems and that TRADOC use these PM's as their single source managers for nonmajor systems. Personnel would be stabilized in the PM office. (Modified author abstract)

AD-783 856/8GA PC$6.75/MF$2.25
Naval Postgraduate School Monterey Calif
A METHODOLOGY FOR THE SIMULATION OF INTERNAL CONTROL SYSTEMS.
Master's thesis,
Carl Maynard Pon. Jun 74, 73p

Descriptors: *Inventory control, *Accounting, Auditing, Computerized simulation, Computer programs, Theses.
Identifiers: Internal control, SIMSCRIPT programming language.

The thesis illustrates a methodology for the simulation of internal control systems. The methodology is applied to an inventory accounting system, which was the subject of the doctoral dissertation of David C. Burns, to provide a quantitative measure of the adequacy of internal control. The methodology consists of conceptualizing errors in a general manner and describing these errors in routines. A computer program is then constructed which calls these routines to simulate the error processes of the internal control system being modeled. The thesis includes a discussion of the suitability and practicability of SIMSCRIPT II.5 to the simulation of internal control systems and also discusses some issues which must be resolved before it will be possible to develop basic requirements for a simulation language specially designed for the simulation of internal control systems. (Author)

AD-783 862/6GA PC$8.50/MF$2.25
Naval Postgraduate School Monterey Calif
RECENT TRENDS IN MANAGEMENT GAMING -- A COMPARATIVE SURVEY OF MANAGEMENT GAMING PRACTICES IN AMERICAN COLLEGIATE SCHOOLS OF BUSINESS IN 1962 AND 1974.
Master's thesis,
Lance Jay Strauss. Jun 74, 107p

Descriptors: *Management, *Game theory, Education, Decision making, Reviews, Theses.
Identifiers: *Management games.

Through a survey of 89 collegiate schools of business, 1974 usage of management gaming in both undergraduate and graduate curriculums was determined and compared to the results of a similar survey of 107 schools of business in 1962. The results of the 1974 survey provided conclusive evidence that in the years following 1962, management gaming has gained increased acceptance and use as an educational technique. This increase in acceptance and use of management gaming from 1962 to 1974 was brought to light by two primary findings of this comparative study. (Modified author abstract)

AECL-4769 PC$4.00/MF$2.25
Atomic Energy of Canada Ltd., Chalk River, Ontario. Chalk River Nuclear Labs.
TECHNOLOGY TRANSFER.
E. C. W. Perryman. Apr 74, 16p CONF-740336-1
U.S. Sales Only.

Descriptors: Communications, Data, Data processing, Design, Education, Electric power, Growth, Industry, Information, International agreements, Meetings, Nuclear power, Power plants, Research programs.

For abstract, see NSA 30 05, number 14697.

LBL-3025 PC$12.50/MF$2.25
California Univ., Berkeley Lawrence Berkeley Lab.
INDIVIDUAL FINANCIAL DECISION MAKING IN BASIC SCIENCE: A NORMATIVE AND DESCRIPTIVE STUDY.
J. L. Zimmerman. May 74, 189p
Contract W-7405-eng-48

Descriptors: (*Research programs, *Management), Computers, Cost, Information retrieval, Information systems, Investment, Lawrence berkeley laboratory, Nuclear physics, Performance, Simulation, Variations.

For abstract, see NSA 30 04, number 12067.

PB-234 121/2GA
Mag Tape $97.50;Foreign $122.50
National Science Foundation, Washington, D.C.
FEDERAL MODELING SURVEY,
William L. Hamilton, Gary Fromm, and Robert Goldman. 1973, 1 reel mag tape NSF/DF-74/001
Prepared by Abt Associates, Inc., Cambridge, Mass.
Specify tape recording mode desired: 7 track, 556 or 800bpi, Bcd, odd or even parity; or 9 track, 800bpi, Ebcdic, odd parity. Also available in punched cards at same price. Price includes User's Guide, PB-234 122.

Descriptors: *Data file, *Management information systems, *Federal policies, *Forecasting, models, Surveys, Classifications, Project planning, Project management, Technical workers, Data acquisition, Classifications, Utilization, Questionnaires, Analytical measures, Magnetic tapes.

A data file is available for the survey of Federally supported modelling efforts. It contains responses from model builders (project directors) and knowledgeable technical personnel in an agency (agency monitor) covers model type, history, cost, and use.

PB-234 618/7GA PC$13.00/MF$2.25
Boston Urban Observatory, Mass.
REALLOCATION OF RESPONSIBILITIES AND/OR FINANCING FOR SELECTED MUNICIPAL SERVICES TO THE STATE: A MUNICIPAL FINANCE ALTERNATIVE.
Final rept.
Oct 73, 197p UO-LCCM-BOS-73-008
Contract HUD-H-987

Descriptors: *Municipal services, *Financing methods, *Property taxes, Reviews, State government, Inequalities, Public administration, Problem solving, Massachusetts.
Identifiers: Boston(Massachusetts).

The basic strategy of the study, that administration and/or financing of selected municipal services should be shifted to the state, is an undeveloped approach to the solution of the municipal finance problem caused by over-dependence on the property tax. The report prescribes criteria for identifying local functions and fiscal responsibilities which are more suitable for state financing. Specific services analyzed include public safety, transportation, waste disposal and county, courts and corrections. A local option of the study evaluates the immediate pattern of real property tax redistribution which would occur if Boston were to base its property tax on full market value.

PB-234 722/7GA PC$3.00/MF$2.25
National Science Foundation, Washington, D.C. Div. of Science Resources Studies.
NATIONAL PATTERNS OF R AND D RESOURCES. FUNDS AND MANPOWER IN THE UNITED STATES, 1953-1974.
Research and Development Statistics, 1953-74,
Rita K. Bricksin, Robert Santos, John Chirichiello, Thomas J. Hogan, and Morris Cobern. Feb 74, 39p* NSF-74-304
Paper copy also available from GPO $1.00.

Descriptors: *Research and development, *Financing, *Professional personnel, Research projects, Research and development expenditures, Scientists, Engineers, Manpower utilization, Cost analysis, National government, Local government, Industries, Universities, Laboratories.

The report presents data on the dollar volume of research and development performed within each sector of the economy, sources of financing, number of R and D scientists and engineers, international comparisons, and other economic characteristics of the Nation's R and D effort.

PB-234 735/9GA PC$3.25/MF$2.25
National Academy of Engineering, Washington, D.C.
EXPERIMENTS IN RESEARCH AND DEVELOPMENT INCENTIVES.
Final rept.
Jun 74, 47p* NAE-ERDIP-1974-12
Contract NSF-C310

Descriptors: *Research and development, *Technology transfer, *Incentives, Financing, Product development, Return on investment, Universities, Industries, National government.

The report is an ad hoc study of the plan and direction of the NSF Experimental R and D Incentives Program. The Panel undertook to identify institutional barriers to innovation and to indicate the types of federal government actions that could overcome these, and evaluate the NSF model for developing incentives experiments.

5B. Documentation and Information Technology

AD-783 544/0GA PC$3.75/MF$2.25
Stanford Research Inst Menlo Park Calif
APPLICATION OF A PROCESS MODEL TO A MANAGEMENT SUPPORT SYSTEM.
Technical rept.,
Marshall C. Pease. Jul 74, 65p Rept no. TR-9
Contract N00014-71-C-0210

Descriptors: *Management information systems, *Decision making, Data bases, Information retrieval, Mathematical models, Problem solving.

The concept of a process model is developed and used as a basis for data organization for use in a Management Support System (MSS). The data organization is proposed as being useful for historical records that constitute the bulk of the information stored in an MSS. The concept of a process model, and the resultant data organization, is tested by considering its application to a variety of query types that are likely to be of importance to a manager. Other uses of the proposed data organization are also considered. Extensions of the process model are considered by combining the model with additional information that results in other types of models that are likely to be of direct value to a manager. A brief discussion is given of the possibilities of developing the concept of a process model into a hierarchy of process models. The possibility of including nonterminating process types also is considered. (Modified author abstract)

AD-783 650/5GA PC$3.00/MF$2.25
Defence Research Information Centre Orpington (England)
DRIC LIBRARY BULLETIN. NUMBER 7, 1974.
1974, 18p
See also Bulletin no. 6, AD-781 522.

Descriptors: *Scientific research, *Abstracts, Periodicals, Information retrieval, Management, Computers, Defense systems, Great Britain.
Identifiers: Announcement bulletins.

The bulletin announces selected references to current periodical literature covering the fields of information science and technology, management, reprographic systems and some computer topics considered of interest to Ministry of Defense activities. The bulletin also carries an accession list of books.

AD-783 778/4GA PC$3.25/MF$2.25
Air Force Academy Colo
AIR FORCE DATA BASE MANAGEMENT SYSTEMS REFERENCE LIST AND ANNOTATED BIBLIOGRAPHY.
Final rept.,
Anthony J. Winkler, Robert J. Tufts, Robert W. Egel, and Jack Catalano. Jul 74, 30p Rept no. USAFA-TR-74-10

Descriptors: *Data bases, *Data management, *Bibliographies, Data storage systems, Information retrieval, Data processing security, On line systems.
Identifiers: Data management systems.

This report lists the data base management system (DBMS) features of thirty-four (34) different applications of DBMSs in the United States Air Force. The features noted include storage structure used, operating environment of the DBMS, data manipulation language (DML) features available, DML type, factors affecting security and integrity, restart and recovery mechanisms, size characteristics of the data base, and on-line communication capabilities and primary use. An annotated bibliography of DBMS literature related to the features mentioned above is also included. The bibliography contains forty-seven (47) entries. (Author)

AD-783 902/0GA PC$5.50/MF$2.25
TRW Systems Group Mclean Va Washington Operations
MODELING OF DATA MANAGEMENT SYSTEMS.
Final rept. Apr 73-Apr 74,
Eldred C. Nelson, Andrew Mercer, and Anupam Shah. Jun 74, 178p RADC-TR-74-153
Contract F30602-72-C-0272

Descriptors: *Data management, Mathematical models, Data bases, Boolean algebra, Feasibility studies, Data storage systems.
Identifiers: Data management systems.

This effort was initiated to investigate the feasibility of using a particular mathematical modeling technique for describing two data management systems (DMS): Integrated Data Store (IDS) and Data Manager -1 (DM-1). The mathematical modeling system is based on the use of boolean algebraic relational matrix notation which serves to describe a wide variety of proposed data structures.

COM-74-50752/6GA MF$2.25
National Oceanic and Atmospheric Administration, Boulder, Colo. Office of the Director (ERL).
SCIENTIFIC AND TECHNICAL PUBLICATIONS OF THE ENVIRONMENTAL RESEARCH LABORATORIES: FISCAL YEAR 1973 (JULY 1, 1972 THROUGH JUNE 30, 1973).
Apr 74, 74p NOAA-74062707
Paper copy available from GPO.

Descriptors: *Meteorology, *Oceanography, *Seismology, *Geomagnetism, *Geodesy, *Ionosphere, *Aerospace environment, *Bibliographies, Indexes(Documentation).

An index of Environmental Research Laboratories publications issued during the Fiscal Year 1973 are presented. The topics reflect all aspects of the NOAA/ERL mission of improving understanding in all aspects of the physical environment. The scientific fields include meteorology, oceanography, seismology, geomagnetism, geodesy, radio propagation, ionospheric physics, aeronomy, solar-terrestrial sciences, geophysical fluid dynamics, ionospheric morphology, and space disturbances. Publications resulting from research contracts or grants, as well as work done by cooperating institutes, and international aid programs are included.

PB-234 335/8GA PC$3.25/MF$2.25
Oklahoma Univ., Norman. Office of Research Administration.
DEVELOPMENT OF A PROTOTYPE SEARCH AND RETRIEVAL NETWORK FOR WATER RESOURCE INFORMATION AND USER EVALUATION SURVEY. (WRSIC RETRIEVAL SYSTEM REPORT NO. 2).
Completion rept. (Final),
Jack L. Morrison, Larry G. Greenwell, Rod Evans, and Jon Freiden. 15 Apr 74, 41p W74-10412
Contract DI-14-31-0001-4250

Descriptors: *Information systems, *Water resources, Information retrieval effectiveness, Data storage, Data retrieval, Evaluation, Surveys, Questionnaires, Acceptability.
Identifiers: User needs.

The Water Resources Scientific Information Center (WRSIC) retrieval system has been available to researchers and other interested parties for an extended period. The system was originally developed at the University of Oklahoma. Water researchers have access to this information system through any of three WRSIC service centers; Cornell University, University of Wisconsin, and North Carolina State University. The major objective of this research was to measure attitudes toward the WRSIC information retrieval system among recent users (July 1973 - January 1974). A secondary objective, of almost equal importance, was to gather information as to how the system might be more valuable to researchers.

PB-234 411/7GA PC$7.50/MF$2.25
West Virginia Div. of Vocational Rehabilitation, Charleston.

GENERAL MEDICAL TERMINOLOGY FOR VOCATIONAL REHABILITATION COUNSELORS. A GUIDE FOR THE REHABILITATION PRACTITIONER.
Final rept.,
William R. Phelps. May 74, 89p
Grant SRS-44-15092

Descriptors: *Dictionaries, *Terminology, Definitions, Nomenclature, Counseling, Orientation(Training), Medicine, Manuals.
Identifiers: *Vocational rehabilitation.

The training guide is prepared primarily for the vocational rehabilitation practitioner, although academicians may also find it of value. Sixteen specific areas are covered, including common abbreviations, prefixes and suffixes, root words, general terms, operative terminology, special senses and body systems, general medical examination, medical glossary, and relevant lay information for the vocational rehabilitation counselor, para-professional personnel, and ancillary rehabilitation personnel.

PB-234 591/6GA PC$6.25/MF$2.25
Commonwealth Scientific and Industrial Research Organization, Melbourne (Australia).
CSIRO ABSTRACTS, VOLUME 22, NUMBER 6, JUNE 1974.
Jun 74, 63p
Abstracts of CSIRO published papers: Translations. See also Volume 22, no. 5, PB-233 214.

Descriptors: *Scientific research, *Industrial research and development, *Australia, *Abstracts, Chemistry, Physics, Animal husbandry, Agriculture, Agronomy, Minerals, Textiles, Mechanical engineering, Food.

Abstracts of papers in the following subject areas are included: Animal genetics, animal health, animal physiology, applied chemistry, applied physics, atmospheric physics, building research, chemical engineering, computing research, entomology, environmental mechanics, fisheries and oceanography, food research, mechanical engineering, mineralogy, textile industry, tropical agronomy.

5C. Economics

AD-783 505/1GA PC$4.25/MF$2.25
Harvard Univ Cambridge Mass Dept of Statistics
ON BOUNDING MOMENTS FROM GROUP DATA.
Technical rept.,
Joseph L. Gastwirth, and Abba M. Krieger. Mar 74, 21p Rept no. TR-41
Contract N00014-67-A-0298-0017
Prepared in cooperation with George Washington Univ., Washington, D.C., Grant NSF-GP-36719.

Descriptors: *Economic models, *Analysis of variance, Probability density functions, Convex sets, Curve fitting, Theorems.
Identifiers: Income inequality, Gini index, Statistical inference.

In the course of a study of income inequality one of the authors obtained bounds on the mean difference of a distribution from data grouped in intervals where the mean of each group is given. The present paper generalizes these results and derives upper and lower bounds to moments of the form the integral of h(x)dF(x) where h(x) is convex and F(x) is concave. This last assumption is useful in studying income data since the density function underlying the income distribution decreases in the upper tail.

AD-783 668/7GA PC$8.50/MF$2.25
Naval Postgraduate School Monterey Calif
A STUDY ON THE REPUBLIC OF VIETNAM'S EXPORTS.
Master's thesis,
Tran Trong Nga. Jun 74, 106p

Descriptors: *Economics, *Vietnam, *Commerce, Foreign aid, Government(Foreign), Policies, Theses.
Identifiers: International trade, *Exports, Developing countries, Economic development.

The paper concentrates on the exports activities of Vietnam. Its main purpose is to present the country's export performance in the past, and to estimate its prospects in the future. In doing so, the study briefly covers the foreign trade policy of developing countries and compares these to the new Vietnamese export policy.

AD-783 777/6GA PC$4.75/MF$2.25
Naval Postgraduate School Monterey Calif
AN APPLICATION OF AN ECONOMETRIC MODEL TO DESCRIBE THE BEHAVIOR OF BUYERS AND SELLERS.
Master's thesis,
James Frederick Callahan. Jun 74, 34p

Descriptors: *Economic models, *Statistical analysis, Regression analysis, Least squares method, Housing(Dwellings), Mathematical models, Theses.
Identifiers: Sales, Prices, Real property.

The study is an attempt to describe the behavior of buyers and sellers. Four econometric models were developed using data obtained on sales consummated. The models, whose coefficients were estimated using stepwise linear regression, illustrated relationships between asked price, sale price, physical parameters of the goods and time of sale. Both statistical and economic interpretation were given to the results obtained. The problems of multicollinearity, heteroscedasticity and explicit treatment of the time variable were discussed. (Author)

AD-783 787/5GA PC$10.50/MF$2.25
Naval Postgraduate School Monterey Calif
THE ECONOMIC DEVELOPMENT OF SINGAPORE.
Master's thesis,
Poh Huat Quek. Jun 74, 149p

Descriptors: *Singapore, *Economics, Industrial production, Commerce, Finance, Theses.
Identifiers: Developing countries, Economic development, International trade.

This thesis gives a comprehensive account of how the Republic of Singapore has achieved its present status and of the formidable social and economic problems confronting its government and people during these days of world economic and monetary instability. An examination of economic literature on economic development and growth models for developing countries reveals that the answer to Singapore's development problems may well lie in industrialization, export promotion, tertiary sector expansion, fiscal measures, financing incentives and other promotional activities. These measures are described thoroughly and their effects are calculated. The increasing annual growth rates of Singapore's manufactured exports and the spreading diversification with regard to products and trading partners must be attributed, at least partly, to the strategy of economic development being currently pursued by its government. (Modified author abstract)

COM-73-50835-23/GA PC-GPO/MF$2.25-NTIS
Department of Commerce, Washington, D.C.
COMMERCE TODAY. VOLUME IV, NUMBER 23.
19 Aug 74, 44p
Paper copy available from GPO $29.80/year; $1.15/copy.

Descriptors: *Commerce, Reviews, Inventories, Inflation(Economics), Offshore drilling, Energy conservation, Research.

Contents:
Large inventory increases in recent quarters may reflect inflation, other special factors;
Newsmemo;
Mini-subs aid energy search along continental shelves;
Oil imports tilt U.S. trade balance into deficit for first half of 1974;
Environmental theme draws throngs to Spokane's expo '74;
Energy management digest;
Domestic business report;
International commerce report.

COM-74-11364/8GA PC$4.25/MF$2.25
Florida Cooperative Extension Service Marine Advisory Program.
LANDINGS, VALUES, AND PRICES IN COMMERCIAL FISHERIES FOR THE FLORIDA KEYS REGION,
Fred J. Prochaska, and James C. Cato. 1974, 25p
SUSF-SG-74-004 NOAA-74061908
Grant NOAA-04-3-158-43
Prepared by Florida Univ., Gainesville. Dept. of Food and Resource Economics.

Descriptors: *Commercial fisheries, *Economic analysis, *Florida, Fish harvesting, Value, Prices, Shellfish.
Identifiers: Sea Grant program, Dade County(Florida), Monroe County(Florida).

Monroe and Dade Counties for the period 1970-72 have averaged approximately 29 million pounds annually of fishery landings. This accounts for about 15% of Florida's total landings. Average annual value of these landings for the same period was $14.3 million which represents 30% of the value of Florida fisheries landings. Both landings and values have increased rapidly over time for the region. The region has also shown annual increases in percent of production of the state's total landings. Monroe County produced about 85% of the region's fishery landings for the last few years although Dade County's 1972 landings represented 30% of the total due to increased spiny lobster landings. Shellfish are the most important product landed in the Keys region, accounting for 80% of production in Dade County and 73% of Monroe County's production.

COM-74-50566-01/GA PC$0.50/MF$2.25
Bureau of Domestic Commerce, Washington, D.C.
PRINTING AND PUBLISHING. VOLUME 15, NUMBER 1, JANUARY 1974.
Quarterly industry rept.
Jan 74, 20p
Paper copy also available from GPO $2.20/year.

Descriptors: *Industry surveys, *Printing, *Publishing, Exports, Import merchandise, Salaries, Labor, Tables(Data), Industry productivity.

Contents:
Manifold business forms exhibits constant growth;
Wages and hours in the U.S printing industry;
Statistical series.

COM-74-50629/6GA PC-GPO/MF$2.25-NTIS
Bureau of International Commerce, Washington, D.C.
GLOBAL MARKET SURVEY. EXPORT OPPORTUNITIES FOR PRINTING AND GRAPHIC ARTS EQUIPMENT.
Jun 74, 139p
Paper copy available from GPO $1.70.

Descriptors: *Market surveys, *Printing, *Graphic arts, Printing equipment, Photographic equipment, Presses, Offset printing, Gravure printing, Typecasting, Composing, Platemaking(Printing), Binding, Australia, Brazil, Czechoslovakia, France, West Germany, Hong Kong, Singapore, Taiwan, Iran, Lebanon, Saudi Arabia, Italy, Japan, Mexico, Spain, Sweden, Switzerland, Great Britain, USSR, Yugoslavia.

The Survey is an export sales tool for decision makers of U.S. firms that manufacture printing and graphic arts equipment. It is both a ready reference of facts and figures on foreign printing industries and a guide to profitable growth opportunities through exports. This Survey contains a series of reports based on market research conducted in 20 countries for the Bureau of International Commerce of the Department of Commerce. They are intended to aid company executives in planning exports of U.S. printing equipment to overseas industries.

COM-74-70100/GA Not available NTIS
Bureau of the Census, Washington, D.C.
CENSUS OF MANUFACTURES: 1972 (PRELIMINARY REPORT).
1974,450 issues
Paper copy available from Social and Economic Statistics Administration, Washington, D.C. 20233, $156.75/set of 450 reports, $0.35/copy.

The reports, issued for each of 450 manufacturing industries (or groups of industries), provide preliminary industry totals for quantity and value of products shipped, value added by manufacture, cost of materials, expenditures for new plant and equipment, and employment. Tables present U.S. industry totals for general statistics; geographic division and state industry totals for general statistics; quantity and value of individual products shipped; and quantity and cost of materials consumed by establishments in the industry. The data are presented for 1972 with comparable historical data. For individual reports, see below:

MC72(P)-20C-2. Canned Fruits and Vegetables, SIC 2033, Mar 74, 11p
MC72(P)-22B-4. Knit Underwear Mills, SIC 2254, Jan 74, 8p
MC72(P)-27A-4. Book Printing, SIC 2732, Mar 74, 11p
MC72(P)-22F-1. Felt Goods, Except Woven Felts and Hats, SIC 2291, Jan 74, 8p
MC72(P)-33C-4. Primary Aluminum, SIC 3334, Feb 74, 8p
MC72(P)-33C-5. Primary Nonferrous Metals, N.E.C., SIC 3339, Feb 74, 12p
MC72(P)-33C-6. Secondary Nonferrous Metals, SIC 3341, Feb 74, 13p
MC72(P)-33D-1. Copper Rolling and Drawing, SIC 3351, Feb 74, 11p
MC72(P)-33D-2. Aluminum Sheet, Plate, and Foil, SIC 3353, Feb 74, 8p
MC72(P)-33D-3. Aluminum Extruded Products, SIC 3354, Feb 74, 8p
MC72(P)-33D-4. Aluminum Rolling and Drawing, N.E.C., SIC 3355, Mar 74, 11p
MC72(P)-34A-2. Metal Barrels, Drums, and Pails, SIC 3412, Mar 74, 8p
MC72(P)-34A-3. Cutlery, SIC 3421, Jan 74, 8p
MC72(P)-34A-4. Hand and Edge Tools, N.E.C., SIC 3423, Jan 74, 8p
MC72(P)-34A-5. Handsaws and Saw Blades, SIC 3425, Jan 74, 8p
MC72(P)-34A-6. Hardware, N.E.C., SIC 3429, Mar 74, 11p
MC72(P)-28G-4. Agricultural Chemicals, N.E.C., SIC 2879, Feb 74, 8p
MC72(P)-28H-1. Adhesives and Sealants, SIC 2891, Mar 74, 8p
MC72(P)-28H-2. Explosives, SIC 2892, Mar 74, 8p
MC72(P)-28H-3. Printing Ink, SIC 2893, Mar 74, 8p
MC72(P)-28H-4. Carbon Black, SIC 2895, Mar 74, 8p
MC72(P)-28H-5. Chemical Preparations, N.E.C., SIC 2899, Mar 74, 11p
MC72(P)-29A-1. Petroleum Refining, Lubricating Oils and Greases, SIC 2911 and SIC 2992, Jan 74, 11p
MC72(P)-29A-2. Paving Mixtures and Blocks, SIC 2951, Jan 74, 8p
MC72(P)-29A-3. Asphalt Felts and Coatings, SIC 2952, Feb 74, 11p
MC72(P)-29A-4. Petroleum and Coal Products, N.E.C., SIC 2999, Jan 74, 8p
MC72(P)-30A-1. Tires and Inner Tubes, SIC 3011, Mar 74, 8p
MC72(P)-30A-2. Rubber and Plastics Footwear, SIC 3021, Mar 74, 8p
MC72(P)-30A-3. Reclaimed Rubber, SIC 3031, Feb 74, 8p
MC72(P)-30A-4. Rubber and Plastics Hose and Belting, SIC 3041, Feb 74, 8p
MC72(P)-30A-5. Fabricated Rubber Products, N.E.C., SIC 3069, Mar 74, 11p
MC72(P)-30A-6. Miscellaneous Plastics Products, SIC 3079, Jan 74, 11p
MC72(P)-31A-1. Leather Tanning and Finishing, SIC 3111, Feb 74, 8p
MC72(P)-31A-2. Boot and Shoe Cut Stock and Findings, SIC 3131, Jan 74, 8p
MC72(P)-31A-3. House Slippers, SIC 3142, Feb 74, 8p
MC72(P)-31A-4. Men's Footwear, Except Athletic, SIC 3143, Feb 74, 8p
MC72(P)-31A-5. Women's Footwear, Except Athletic, SIC 3144, Mar 74, 8p
MC72(P)-31A-6. Footwear, Except Rubber, N.E.C., SIC 3149, Mar 74, 8p
MC72(P)-31B-1. Leather Gloves and Mittens, SIC 3151, Jan 74, 8p
MC72(P)-31B-2. Luggage, SIC 3161, Feb 74, 8p
MC72(P)-31B-3. Women's Handbags and Purses, SIC 3171, Jan 74, 8p
MC72(P)-31B-4. Personal Leather Goods, SIC 3172, Feb 74, 8p
MC72(P)-31B-5. Leather Goods, N.E.C., SIC 3199, Feb 74, 8p
MC72(P)-32A-1. Flat Glass, SIC 3211, Jan 74, 8p
MC72(P)-32A-2. Glass Containers, SIC 3221, Dec 73, 8p
MC72(P)-32A-4. Products of Purchased Glass, SIC 3231, Feb 74, 8p
C72(P)-32B-1. Cement, Hydraulic, SIC 3241, Mar 74, 8p
MC72(P)-32B-2. Brick and Structural Clay Tile, SIC 3251, Feb 74, 8p
MC72(P)-32B-3. Ceramic Wall and Floor Tile, SIC 3253, Feb 74, 8p
MC72(P)-32B-4. Clay Refractories, SIC 3255, Feb 74, 8p
MC72(P)-32B-5. Structural Clay Products, N.E.C., SIC 3259, Mar 74, 8p
MC72(P)-32C-1. Vitreous Plumbing Fixtures, SIC 3261, Mar 74, 8p
MC72(P)-32C-2. Vitreous China Food Utensils, SIC 3262, Feb 74, 8p
MC72(P)-32C-3. Fine Earthenware Food Utensils, SIC 3263, Jan 74, 8p
MC72(P)-32C-4. Porcelain Electrical Supplies, SIC 3264, Mar 74, 8p
MC72(P)-32C-5. Pottery Products, N.E.C., SIC 3269, Jan 74, 8p
MC72(P)-32D-1. Concrete Block and Brick, SIC 3271, Mar 74, 8p
MC72(P)-32D-2. Concrete Products, N.E.C., SIC 3272, Mar 74, 11p
MC72(P)-32D-3. Ready-Mixed Concrete, SIC 3273, Mar 74, 8p
MC72(P)-32A-3. Pressed and Blown Glass, N.E.C., SIC 3229, Feb 74, 8p
MC72(P)-32D-4. Lime, SIC 3274, Mar 74, 8p
MC72(P)-32D-5. Gypsum Products, SIC 3275, Mar 74, 8p
MC72(P)-32D-6. Cut Stone and Stone Products, SIC 3281, Mar 74, 8p
MC72(P)-32E-1. Abrasive Products, SIC 3291, Mar 74, 8p
MC72(P)-32E-2. Asbestos Products, SIC 3292, Feb 74, 8p
MC72(P)-32E-3. Gaskets, Packing and Sealing Devices, SIC 3293, Mar 74, 8p
MC72(P)-32E-4. Minerals, Ground or Treated, SIC 3295, Mar 74, 8p
MC72(P)-32E-5. Mineral Wool, SIC 3296, Jan 74, 8p
MC72(P)-32E-6. Nonclay Refractories, SIC 3297, Mar 74, 8p
MC72(P)-32E-7. Nonmetallic Mineral Products, N.E.C., SIC 3299, Mar 74, 8p
MC72(P)-33A-1. Blast Furnaces and Steel Mills, SIC 3312, Mar 74, 20p
MC72(P)-33A-2. Electrometallurgical Products, SIC 3313, Jan 74, 8p
MC72(P)-33A-3. Steel Wire and Related Products, SIC 3315, Mar 74, 11p
MC72(P)-33A-4. Cold Finishing of Steel Shapes, SIC 3316, Jan 74, 8p
MC72(P)-33A-5. Steel Pipe and Tubes, SIC 3317, Jan 74, 8p
MC72(P)-33B-1. Gray Iron Foundries, SIC 3321, Jan 74, 11p
MC72(P)-33B-2. Malleable Iron Foundries, SIC 3322, Jan 74, 8p
MC72(P)-33B-3. Steel Investment Foundries, SIC 3324, Feb 74, 8p
MC72(P)-33B-4. Steel Foundries, N.E.C., SIC 3325, Feb 74, 8p
MC72(P)-33B-5. Aluminum Foundries, SIC 3361, Jan 74, 8p
MC72(P)-33B-6. Brass, Bronze, and Copper Foundries, SIC 3362, Mar 74, 8p
MC72(P)-33B-7. Nonferrous Foundries, N.E.C., SIC 3369, Mar 74, 8p
MC72(P)-33C-1. Primary Copper, SIC 3331, Jan 74, 11p
MC72(P)-33C-2. Primary Lead, SIC 3332, Jan 74, 8p
MC72(P)-33C-3. Primary Zinc, SIC 3333, Feb 74, 8p
MC72(P)-33D-5. Nonferrous Rolling and Drawing, N.E.C., SIC 3356, Mar 74, 11p
MC72(P)-33D-6. Nonferrous Wiredrawing and Insulating, SIC 3357, Mar 74, 16p
MC72(P)-33D-7. Metal Heat Treating, SIC 3398, Jan 74, 8p
MC72(P)-33D-8. Primary Metal Products, N.E.C., SIC 3399, Mar 74, 8p
MC72(P)-34A-1. Metal Cans, SIC 3411, Mar 74, 11p
MC72(P)-34B-1. Metal Sanitary Ware, SIC 3431, Feb 74, 11p
MC72(P)-34B-2. Plumbing Fittings and Brass Goods, SIC 3432, Feb 74, 8p
MC72(P)-34B-3. Heating Equipment, Except Electric, SIC 3433, Mar 74, 12p
MC72(P)-34C-1. Fabricated Structural Metal Products, SIC 3441, Feb 74, 11p
MC72(P)-34C-2. Metal Doors, Sash, and Trim, SIC 3442, Mar 74, 11p
MC72(P)-34C-3. Fabricated Platework (Boiler Shops), SIC 3443, Mar 74, 11p
MC72(P)-34C-4. Sheet Metalwork, SIC 3444, Mar 74, 11p
MC72(P)-34C-5. Architectural Metalwork, SIC 3446, Feb 74, 11p
MC72(P)-34C-6. Prefabricated Metal Buildings, Miscellaneous Metalwork, SIC 3448 and SIC 3449, Feb 74, 8p
MC72(P)-34D-2. Bolts, Nuts, Rivets, and Washers, SIC 3452, Mar 74, 11p
MC72(P)-34D-3. Iron and Steel Forgings, SIC 3462, Jan 74, 8p
MC72(P)-34D-4. Nonferrous Forgings, SIC 3463, Dec 73, 8p
MC72(P)-34D-5. Automotive Stampings, SIC 3465, Dec 73, 8p
MC72(P)-34D-6. Crowns and Closures, SIC 3466, Dec 73, 8p
MC72(P)-34D-7. Metal Stampings, N.E.C., SIC 3469, Jan 74, 8p
MC72(P)-34D-8. Plating and Polishing, SIC 3471, Jan 74, 8p
MC72(P)-34D-9. Metal Coating and Allied Services, SIC 3479, Mar 74, 8p
MC72(P)-34E-1. Small Arms Ammunition, SIC 3482, Jan 74, 8p
MC72(P)-34E-2. Ammunition, Except for Small Arms, N.E.C., SIC 3483, Dec 73, 8p
MC72(P)-34E-3. Small Arms, SIC 3484, Jan 74, 8p
MC72(P)-34E-4. Ordnance and Accessories, N.E.C., SIC 3489, Jan 74, 8p
MC72(P)-34F-1. Steel Springs, Except Wire, SIC 3493, Jan 74, 8p
MC72(P)-34F-2. Valves and Pipe Fittings, SIC 3494, Mar 74, 12p
MC72(P)-20E-1. Bread, Cake, and Related Products, SIC 2051, Jan 74, 12p
MC72(P)-20E-2. Cookies and Crackers, SIC 2052, Feb 74, 8p
MC72(P)-20F-1. Raw Cane Sugar, SIC 2061, Jan 74, 8p
MC72(P)-20H-5. Bottled and Canned Soft Drinks, SIC 2086, Mar 74, 12p
MC72(P)-20H-6. Flavoring Extracts and Sirups, N.E.C., SIC 2087, Mar 74, 8p

MC72(P)-20I-1. Canned and Cured Seafoods, SIC 2091, Feb 74, 8p
MC72(P)-20I-2. Fresh or Frozen Packaged Fish, SIC 2092, Mar 74, 8p
MC72(P)-20I-3. Roasted Coffee, SIC 2095, Jan 74, 8p
MC72(P)-20I-5. Macaroni and Spaghetti, SIC 2098, Dec 73, 8p
MC72(P)-20I-6. Food Preparations, N.E.C., SIC 2099, Mar 74, 11p
MC72(P)-21A-1. Cigarettes, SIC 2111, Nov 73, 7p
MC72(P)-21A-2. Cigars, SIC 2121, Nov 73, 7p
MC72(P)-21A-3. Chewing and Smoking Tobacco, SIC 2131, Nov 73, 7p
MC72(P)-21A-4. Tobacco Stemming and Redrying, SIC 2141, Nov 73, 7p
MC72(P)-22A-1. Weaving Mills, Cotton, SIC 2211, Mar 74, 11p
MC72(P)-22A-2. Weaving Mills, Manmade Fiber and Silk, SIC 2221, Mar 74, 7p
MC72(P)-22A-3. Weaving and Finishing Mills, Wool, SIC 2231, Mar 74, 7p
MC72(P)-22A-4. Narrow Fabric Mills, SIC 2241, Dec 73, 7p
MC72(P)-22B-1. Women's Hosiery, Except Socks, SIC 2251, Jan 74, 7p
MC72(P)-22B-6. Warp Knit Fabric Mills, SIC 2258, Jan 74, 7p
MC72(P)-22B-7. Knitting Mills, N.E.C., SIC 2259, Dec 73, 7p
MC72(P)-22C-1. Finishing Plants, Cotton, SIC 2261, Mar 74, 7p
MC72(P)-22C-2. Finishing Plants, Manmade Fiber and Silk Fabric, SIC 2262, Mar 74, 7p
MC72(P)-22C-3. Finishing Plants, N.E.C., SIC 2269, Mar 74, 7p
MC72(P)-22D-1. Woven Carpets and Rugs, SIC 2271, Dec 73, 7p
MC72(P)-23E-4. Canvas and Related Products, SIC 2394, Jan 74, 7p
MC72(P)-23E-5. Pleating and Stitching, SIC 2395, Jan 74, 7p
MC72(P)-23E-6. Automotive and Apparel Trimmings, SIC 2396, Feb 74, 7p
MC72(P)-23C-7. Children's Outerwear, N.E.C., SIC 2369, Mar 74, 7p
MC72(P)-23D-1. Fur Goods, SIC 2371, Jan 74, 7p
MC72(P)-23D-2. Fabric Dress and Work Gloves, SIC 2381, Jan 74, 7p
MC72(P)-23D-3. Robes and Dressing Gowns, SIC 2384, Jan 74, 7p
MC72(P)-23D-4. Waterproof Outer Garments, SIC 2385, Mar 74, 7p
MC72(P)-23D-5. Leather and Sheep Lined Clothing, SIC 2386, Jan 74, 7p
MC72(P)-23D-6. Apparel Belts, SIC 2387, Jan 74, 7p
MC72(P)-23D-7. Apparel and Accessories, N.E.C., SIC 2389, Jan 74, 7p
MC72(P)-23E-1. Curtains and Draperies, SIC 2391, Jan 74, 7p
MC72(P)-23E-2. Housefurnishings, N.E.C., SIC 2392, Mar 74, 10p

PB-234 652/6GA PC$21.00/MF$2.25
Nathan (Robert R.), Associates, Inc., Washington, D.C.
THE FOREIGN MARKET POTENTIA FOR UNITED STATES COAL. VOLUME IV. ANNEXES E-P.
Final rept. Nov 62-Aug 63.
Sep 63, 359p OCR-3-Vol-4
Contract DI-14-01-0001-258
Paper copy also available in set of 4 reports as PB-234 648-SET, PC$51.00.

Descriptors: *Coal industry, *Export opportunities, *United States trade regulations, *Cost reduction, Reviews, Government policies, Price developments, Great Britain, Production rate, Export import indexes, Energy consumption, Market appraisals, Statistical data.

Volume four in a four volume series on the prospects for exporting U.S. coal to foreign countries deals with the United Kingdom, its indigenous energy sources, statistics on coal and oil imports, energy consumption trends, the projected marked for U.S. coal, and the future policies for restrictions.

5D. History, Law, and Political Science

AD-783 610/9GA PC$3.75/MF$2.25
Rand Corp Santa Monica Calif
SOVIET AND EAST EUROPEAN FORECASTS OF EUROPEAN SECURITY: PAPERS FROM THE 1972 VARNA CONFERENCE,
Lilita Dzirkals, and A. Ross Johnson. Jun 73, 57p Rept no. R-1272-PR
Contract F44620-73-C-0011
Trans. of Soviet and East European Papers from various jnls.

Descriptors: *Europe, *National defense, *Meetings, *Political science, International relations, Agreements, Forecasting, Eastern Europe, USSR, Western Europe, Translations, Economics, Cooperation, Conflict, Deterrence.

The report is a collection of original short summaries of Soviet and East European papers that forecast future security arrangements for Europe. The full papers, including those from Western Europe, were published in December 1972. Key themes, compared by country in a table composed by the editors, include military balance, general character of East-West relations, political-security system, role of alliances, role of USSR, role of U.S., role of European community, role of non-Soviet Eastern Europe, MBFR, forthcoming Conference on Security and Cooperation in Europe, German question, neutral and nonaligned states, East-West economic relations, potential crises, and potential causes of revival of tension. The papers generally present first an analysis of the current situation and then a ten-year forecast.

AD-783 643/0GA PC$8.00/MF$2.25
Air Force Academy Colo
THE AIR FORCE ACADEMY ASSEMBLY ON INTERNATIONAL STABILITY AND PROGRESS - APRIL 1-4, 1959.
Final rept.
4 Apr 59, 99p

Descriptors: *Political science, *Meetings, United States government, Policies, Foreign aid, International relations, Stability, Students, Air force.

Contents:
United States policy and foreign aid;
International stability and progress: problems and prospects;
Revolution and the American citizen.

AD-783 644/8GA PC$6.50/MF$2.25
Air Force Academy Colo
THE AIR FORCE ACADEMY ASSEMBLY ON THE REPRESENTATION OF THE UNITED STATES ABROAD - MAR 9-12, 1960.
Final rept.
12 Mar 60, 67p

Descriptors: *Political science, *Meetings, United States government, International relations, Students, Air force.

Contents:
The representation of the United States abroad:
problems and prospects;
The art of overseasmanship.

AD-783 651/3GA PC$3.25/MF$2.25
Rand Corp Santa Monica Calif
A FRAMEWORK FOR EXPLORING ESCALATION CONTROL,
W. M. Jones. Jun 74, 38p Rept no. R-1536-RC

Descriptors: *Political science, Tension, International relations, Criticality, Management, United States Government, USSR, Middle East.
Identifiers: Political crisis situations.

The report characterizes specific crises in a way that permits an orderly study of alternative steps in a given crisis and rough comparisons among crises. One reason is to predict the utility of actual or proposed weapons systems. Another is to understand features of crisis management--e.g., the exploration of escalatory steps--so that recurrent stopping places short of mutual suicide may be identified. The report focuses on the interactions--the levels of tension--that develop between the United States and the USSR in crises, e.g., the Yom Kippur War. The approach is to view the crisis as a system subject to change by the actions of either or both superpowers and in some cases by third parties. The kinds of political and military moves a superpower can make are identified and depicted in a series of ordinally arranged matrices.

AD-783 655/4GA PC$6.75/MF$2.25
Air Force Academy Colo
NATIONAL GOALS: CHALLENGES FOR THE SIXTIES.
Final rept.
25 Mar 61, 75p
Proceedings of Air Force Academy Assembly (3rd), 22-25 Mar 61. See also AD-777 941.

Descriptors: *Political science, *Meetings, United States government, Foreign policy, Students, Air force.

Contents:
National purpose;
Foreign policy goals;
The Democratic process;
The responsibilities of free men;
Final report of student round table discussions.

AD-783 701/6GA PC$5.50/MF$2.25
Center for Naval Analyses Arlington Va
ANTICIPATING SOVIET BEHAVIOR AT THE THIRD U. N. LAW OF THE SEA CONFERENCE: USSR POSITIONS AND DILEMMAS,
Robert L. Friedheim, and Mary E. Jehn. Aug 74, 48p Rept no. CNA-Professional paper-124

Descriptors: *International law, Conferences, USSR, Resources, Fisheries, Strategy.
Identifiers: Mineral deposits, *Law of the sea, Territorial seas, Straits, Negotiations.

The known probable Soviet positions on a number of major substantive ocean law issues are assessed. Some serious problems the Soviet Union will face in developing its bargaining strategy for the UN conference are examined.

AD-783 795/8GA PC$5.75/MF$2.25
Army War Coll Carlisle Barracks Pa
THE IMPACT OF THAI POLITICAL TRENDS ON U. S. FOREIGN POLICY IN SOUTHEAST ASIA.
Individual research project,
Robert E. Joseph, Jr. 29 May 74, 51p

Descriptors: *Foreign policy, *United States Government, *Southeast Asia, *Thailand, Government(Foreign), International relations, Conflict, Power, Stability, China.

What impact will recent Thai political changes have on the formulation of United States foreign policy in Southeast Asia. The special United States/Thailand relationship which evolved during the 1960's is discussed. The October 1973 uprising is examined to determine its causative factors and the reasons for the students' success. An analysis of several Thais expected to provide the country's future leadership is then made along with a discussion of current problem areas confronting the Thai leaders. Major power interests and activities

which bear directly on US foreign policy in Southeast Asia are then analyzed. (Modified author abstract)

AD-783 797/4GA PC$6.75/MF$2.25
Army War Coll Carlisle Barracks Pa
SOVIET POLITICO-MILITARY STRATEGY FOR EUROPE, 1977-1984: IMPLICATIONS FOR THE UNITED STATES AND NATO.
Group research project,
Neill R. Gruver, Wallace G. Hunt, Thomas J. Manning, Clarence A. Trowbridge, and Randall L. Williams. 22 May 74, 74p

Descriptors: *Foreign policy, *Military strategy, *USSR, *Europe, United States government, NATO, Eastern Europe, China, Japan.

The study examines the likely USSR political objectives towards Western Europe over the next decade and the strategy the Soviets will employ to gain these objectives. Also, possible implications of this strategy on the US and NATO were examined. It is concluded that the Soviet Union has indeed not renounced the idea of world dominance. Detente is perceived as an expedient to improve its economic, technological, and military capabilities, while undermining American influence in Europe. The Soviets believe they can achieve their objectives without their involvement in a major armed conflict. Confrontation, yes, but confrontation short of war. The United States and NATO should not be lulled into a false sense of security; thereby creating a political vacuum for the Soviets to expand their influence. (Modified author abstract)

AD-783 798/2GA PC$6.25/MF$2.25
Army War Coll Carlisle Barracks Pa
THE SINO-SOVIET ISSUE: WAR BY 1990.
Group research project,
Jack B. Farris, Jr., Bertin W. Springstead, and Edward L. Stephens. 31 May 74, 61p

Descriptors: *Foreign policy, *USSR, *China, Conflict, Tension, International relations, Power.

The study examines whether or not there is a reasonable probability that the Soviet Union and China will be at war between now and 1990--whether the current Sino-Soviet rift will deepen into conflict. After a brief historical overview, the national interests of each country are explored. They indicate a continued hostile relationship for the foreseeable future, barring major changes in the national interests. Four variables are introduced and considered in detail: the problem of succession, particularly in China after Mao's death; the increasing size of each country's nuclear arsenal; the border dispute, its background and significance; and the probable direction which the balance of power in the Asian area will take. (Modified author abstract)

AD-783 799/0GA PC$5.50/MF$2.25
Army War Coll Carlisle Barracks Pa
THE CLASSICAL STRATEGIST IN THE NUCLEAR AGE: HERO OR HAS-BEEN.
Individual research project,
Richard L. Curl. 29 May 74, 46p

Descriptors: *Deterrence, *Military strategy, Reviews, United States Government, International relations, National defense, Leadership, Sociology.

Contents:
Deterrence--the rise and fall;
The new school;
Leadership of the new school.

AD-783 800/6GA PC$5.75/MF$2.25
Army War Coll Carlisle Barracks Pa
CIVIL-MILITARY RELATIONS IN NIGERIA, ZAIRE AND ETHIOPIA AND THEIR IMPACT ON U.S. NATIONAL SECURITY INTERESTS.
Individual research project,
Charles H. Dawson. 30 May 74, 52p

Descriptors: *International relations, *Nigeria, *Zaire, *Ethiopia, United States Government, National defense, Foreign aid.
Identifiers: Developing countries.

The paper examines civil-military interrelations in Nigeria, Zaire, and Ethopia, and the impact these countries have on US national security interests. These three countries are the most important countries in Africa to the US, in the area of national security interests. In each of the three countries there is an examination of the civil-military inter-mix since independence and an assessment of the present political situation and outlook for the future. In each section there is a historical look at US relations in general with each country and then a closer examination of specific US involvements in economic, educational, military sales and assistance programs. (Modified author abstract)

AD-783 802/2GA PC$6.00/MF$2.25
Army War Coll Carlisle Barracks Pa
THE MILITARY AND THE MEDIA: A PTOBLEM OF PERCEPTION.
Individual research project,
Donald S. Mahlberg. 30 May 74, 58p

Descriptors: *Newspapers, *Public opinion, *Department of Defense, Reviews, Korea, Vietnam, Attitudes(Psychology), Officer personnel, Military training, United States government.
Identifiers: World War 1, World War 2.

The author suggests that military education in mass communication should include a study of the development of the American press. The paper examines some of the more significant aspects of the history and development of the press, touching on the First Amendment, its origins, printing in Early England, and the Eighteenth Century English Press. The paper then studies the attitudes of the American press through the first century after ratification and through the wars of the 20th century. The paper also examines the continuing conflict between press and government from the Roosevelt administration to the present.

AD-783 891/5GA PC$9.75/MF$2.25
Army War Coll Carlisle Barracks Pa
CIVIL WORKS IN THE ARMY.
Individual research rept.,
Gerald E. Galloway. 1 Jun 74, 134p

Descriptors: *Department of Defense, *Civil affairs, *Military engineering, Army, Reviews, Surveys, Construction, Disasters, Civil engineering.
Identifiers: Public works, Army Corps of Engineers.

The report examined all aspects of the rationale used by the Department of Defense to support retention within the Army of the civil works mission of the Army Corps of Engineers. The report concluded that the advantages to the Defense Department of retention of the civil mission far outweigh the disadvantages. History and the views of the survey respondents support the utility to the defense establishment of a construction organization-in-being, of the training value of civil assignments and of the grass roots contacts of the Corps' civil efforts. Further, the advantages accruing to the nation from the competence and integrity of the Corps militate against any precipitate transfer of civil functions from the Army. (Modified author abstract)

AD-783 892/3GA PC$15.75/MF$2.25
Army War Coll Carlisle Barracks Pa
THE DECISION PROCESS OF THE CIVIL WORKS FUNCTION OF THE U.S. ARMY CORPS OF ENGINEERS.
Individual research project rept.,
Gerald E. Galloway. 10 Jun 74, 252p

Descriptors: *Military engineering, *Civil affairs, *Decision making, *Army, Construction, Dams, Reviews, Surveys.
Identifiers: Army Corps of Engineers.

Over the past quarter century considerable criticism has been directed at the Army Corps of Engineers by the media, educators, some members of Congress and environmentalists for allegedly excluding the public from its decision process. This, critics note, has resulted in Corps bias towards dams and structural solutions and a neglect of relevant social issue. All aspects of these criticisms were examined. The report recommends that the Corps of Engineers take action to bring all operating elements to the same level of performance and that the Corps undertake a vigorous program to further educate and involve the public in its activities. (Modified author abstract)

AD-783 947/5GA PC$3.25/MF$2.25
University of Southern California Los Angeles International Relations Research Inst
CYBERNETIC ANALYSIS OF A SIMULATED INTERNATIONAL THREAT SYSTEM: PRINCIPLES AND PROCEDURES.
Interim technical rept. May-Aug 74,
Richard Smith Beal. Aug 74, 49p Rept no. TR/A-Technical Paper-15
Contract N00014-67-A-0269-0029, ARPA Order-2518
Report on Threat Recognition and Analysis Project.

Descriptors: *Threat evaluation, *Global, Systems analysis, Cybernetics, International relations, Simulation, Threats, Interactions, Control.
Identifiers: *TRASS(Threat Recognition and Analysis Simulated System), *Threat recognition and analysis simulated system.

The report states the principles and procedures governing the design, construction, execution and analysis of a simulated international threat system. These principles and procedures address themselves to: (1) the application of cybernetics to threat research specifically, and international relations research generally; (2) the research utility of an expanded notion of threat, namely 'situational threat'; and, (3) the use of event data in the simulation of synthetic international futures. The approach adopted to explore these issues is to ask experimental subjects in a simulated context to monitor, and where possible, control a synthetic international threat system. The argument is advanced that cybernetics and systems analysis techniques are particularly well suited to the analysis of complex systems which are constantly changing. (Modified author abstract)

COM-74-11276-01/GA
(Order as COM-74-11276)
Center for the Study of Democratic Institutions, Santa Barbara, Calif.
BOOM, DOOM, AND GLOOM OVER THE OCEANS: THE ECONOMIC ZONE, THE DEVELOPING NATIONS, AND THE CONFERENCE ON THE LAW OF THE SEA,
Elizabeth Many Borgese. May 74, 17p NOAA-74060507-1
Included in The San Diego Law Review, v11 n3 p541-556 May 74.

Descriptors: *International law, International relations, Economics, Ocean environments, Resources, Meetings, Research, Treaties, Government policies, Management.
Identifiers: *Law of the sea.

After commenting on the conflicting claims of development, environmental, and national interests of all concerned parties, the author suggests ways leading toward reconciliation of various conflicting viewpoints in the Law of the Sea Conference 1974.

COM-74-11276-02/GA
(Order as COM-74-11276)
Massachusetts Inst. of Tech., Cambridge. Dept. of Ocean Engineering.
THE LAW OF THE SEA: ALLIANCES AND DIVISIVE ISSUES IN INTERNATIONAL OCEAN NEGOTIATIONS,
Judith Tegger Kildow. May 74, 22p NOAA-74060507-2
Included in The San Diego Law Review, v11 n3 p558-578 May 74.

Descriptors: *International law, International relations, Treaties, Economics, Resources, Policies, Government policies, Negotiations.
Identifiers: *Law of the sea.

A review is given of the substantive and political issues involved in international oceans negotiations. The author describes the way various parties (nations) have alligned themselves over time on the various issues, demonstrating the complexities of ocean politics.

COM-74-11276-03/GA
(Order as COM-74-11276)
Venezuelan Embassy, United States, Washington, D.C. Ambassador Extraordinary and Plenipotentiary.
THE PATRIMONIAL SEA OR ECONOMIC ZONE CONCEPT,
Andres Aguilar. May 74, 25p NOAA-74060507-3
Included in The San Diego Law Review, v11 n3 p579-602 May 74.

Descriptors: *International law, International relations, Economics, Management, Treaties, Continental shelves, Ocean environments, Terratorial seas, Coastal waters.
Identifiers: *Patrimonial seas, *Law of the sea, Contiguous zone.

The patrimonial sea concept is presented, in the light of the proposals formally submitted to the United Nations Sea-Bed Committee, and consideration is given to the implications it would have, if accepted, for the juridicial regime of the other sea areas recognized in existing international law: the territorial sea, the contiguous zone, the continental shelf and the high seas.

COM-74-11276-04/GA
(Order as COM-74-11276)
Universidad Simon Bolivar, Caracas (Venezuela). Inst. of Marine Science and Technology.
VENEZUELA'S CONTRIBUTION TO THE CONTEMPORARY LAW OF THE SEA,
Kaldone G. Nweihed. May 74, 32p NOAA-74060507-4
Included in The San Diego Law Review, v11 n3 p603-632 May 74.

Descriptors: *International law, International relations, Continental shelves, Management, Policies, Venezuela, Terratorial seas.
Identifiers: Patrimonial seas, *Law of the sea.

Venezuela's contribution to the contemporary law of the sea is of special interest since that country will host the 1974 conference. The author reviews the development of the continental shelf doctrine and the concept of the patrimonial sea, with emphasis on the role of Venezuela in historical perspective.

COM-74-11276-05/GA
(Order as COM-74-11276)
Southern Connecticut State Coll., New Haven. Dept. of Geography.
DEVELOPING LAND-LOCKED STATES AND THE RESOURCES OF THE SEABED,
Martin Ira Glassner. May 74, 24p NOAA-74060507-5
Included in The San Diego Law Review, v11 n3 p633-655 May 74.

Descriptors: *International law, International relations, Resources, Navigation, Government policies, Coastal waters, Coastal districts.
Identifiers: *Law of the sea.

The rights of the world's 26 land-locked states and other political entities to the resources of the sea are discussed. The analysis proceeds from the generally accepted principle that the sea is the common property of all, with established rights of free navigation. This being so, there should be some formula to allow land-locked peoples some equitable share in the ocean's wealth.

COM-74-11276-06/GA
(Order as COM-74-11276)
Rosenstiel School of Marine and Atmospheric Science, Miami, Fla.
ECONOMIC ASPECTS OF FISHERIES UTILIZATION IN THE LAW OF THE SEA NEGOTIATIONS,
Lee G. Anderson. May 74, 24p NOAA-74060507-6
Included in The San Diego Law Review, v11 n3 p656-678 May 74.

Descriptors: *International law, International relations, Fisheries, Management, Economics, Conservation, Information.
Identifiers: *Law of the sea.

The main portion of this paper discusses several of the proposed solutions to international fisheries management in light of their ability to bring about rational economic use of marine fisheries.

COM-74-11276-07/GA
(Order as COM-74-11276)
Columbia Univ., New York. Graduate School of Business.
THE WEALTH OF THE OCEANS AND THE LAW OF THE SEA: SOME PRELIMINARY OBSERVATIONS,
Giulio Pontecorvo, and Roger Mesznik. May 74, 13p NOAA-74060507-7
Included in The San Diego Law Review, v11 n3 p679-690 May 74.

Descriptors: *International law, International relations, Economics, Management, Resources, Policies.
Identifiers: *Law of the sea.

An analysis of the changing values of ocean resources and how these changes affect the problem of ocean management is presented. These changes are considered in a dynamic framework with due consideration to the related methodological difficulties.

COM-74-11276/4GA PC$7.25/MF$2.25
California Univ., San Diego, La Jolla. Inst. of Marine Resources.
THE SAN DIEGO LAW REVIEW, VOLUME II, NUMBER 3, MAY 1974. (LAW OF THE SEA VI).
May 74, 323p* NOAA-74060507
Grant NOAA-04-3-158-22
Prepared in cooperation with San Diego Univ., Calif. School of Law.

Descriptors: *International law, International relations, Ocean environments, Economics, Resources, Meetings, Research, Treaties, Government policies, Management, Negotiations, Continental shelves, Territorial seas, Coastal waters, Venezuela, Navigation, Conservation, Information.
Identifiers: Patrimonial seas, *Law of the sea, Contiguous zone.

This issue of the Review is devoted to articles, comments, and notes on recent developments relevant to the matter of Law of Sea. Perspectives are economic, legal, ecological and political.

JPRS-62456 PC$5.00/MF$2.25
Joint Publications Research Service, Arlington, Va.
TRANSLATIONS ON THE LAW OF THE SEA. I.
Special rept.
12 Jul 74, 168p
Trans. of articles from various journals. See also Part 2, JPRS-62499.

Descriptors: *International law, International relations, Translations, Natural resources, Fishing, Continental shelves, Territoral seas, Oil recovery, Asia, Africa, Europe, USSR, North America, Water pollution.
Identifiers: *Law of the Sea, Latin America, Near East.

Translations from the world press and radio of articles and commentary on the Law of the Sea conference and subject matter covered by that conference are presented.

JPRS-62499 PC$3.75/MF$2.25
Joint Publications Research Service, Arlington, Va.
TRANSLATIONS ON THE LAW OF THE SEA. II. ARTICLES FROM CNEXO BULLETIN.
Special rept.
17 Jul 74, 55p
Trans. of articles from various journals. See also Part 1, JPRS-62456.

Descriptors: *International law, International relations, Translations, Natural resources, Offshore drilling, Exploitation, Exploration, Manganese nodules, Oil recovery, Indian Ocean, France, Federal Republic of Germany, Fishing, Undersea mineral deposits, Underwater equipment, Marketing, Pacific Ocean, Japan.
Identifiers: MidAtlantic Ridge, *Law of the sea.

Translations from the world press and radio of articles and commentary on the Law of the Sea Conference and subject matter covered by that conference are presented.

JPRS-62566 PC$4.00/MF$2.25
Joint Publications Research Service, Arlington, Va.
TRANSLATIONS ON THE LAW OF THE SEA. IV.
Special rept.
25 Jul 74, 89p
Trans. of articles from various journals. See also Part 2, JPRS-62499.

Descriptors: *International law, International relations, Translations, Natural resources, Fishing, Continental shelves, Territorial seas, Oil recovery, Africa, Asia, Water pollution, Europe.
Identifiers: *Law of the sea, Near East, Latin America.

Translations from the world press and radio of articles and commentary on the Law of the Sea Conference and subject matter covered by that conference are presented.

PB-234 647/6GA PC$15.25/MF$2.25
Boston Urban Observatory, Mass.
IMPACT OF THE STATE-LOCAL TAX-SERVICE MIX ON MUNICIPAL FINANCES IN THE BOSTON METROPOLITAN AREA: A PRELIMINARY EVALUATION.
Final rept.
Dec 72, 243p UO-LCCM-BOS-72-007
Contract HUD-H-987

Descriptors: *Local government, *Financing, *Property taxes, *Massachusetts, Economic escalation factors, Problem solving, Municipal services, Allocations, Government policies, Skewness, Recommendations.
Identifiers: *Boston(Massachusetts), Inequitabilities.

The two major objectives of this report were: (1) based upon present trends, to alert municipal decision-makers to predictions in property tax escalation for 1975; (2) to demonstrate to state officials

the irrational service-tax mix wherein many high-cost municipal functions are financed from property taxes. The report not only examines fiscal trends in revenue requirements and property taxes, but also provides cost analyses of selected municipal services. It is concluded that only through state financing and reallocation of certain functional responsibilities can expenditure disparities be corrected.

TID-26470 PC$5.45/MF$2.25
USAEC Technical Information Center, Oak Ridge, Tenn.
ISSUANCES OF THE BOARD OF CONTRACT APPEALS, JULY 1972--DECEMBER 1973.
May 74, 102p

Descriptors: Bibliographies, Legal aspects, Licensing, Management, Regulations, Us aec.

For abstract, see NSA 30 04, number 12068.

UCRL-75656 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
COMPUTERS AND CRIME.
R. P. Abbott. 25 Apr 74, 17p CONF-740427-2
Contract W-7405-eng-48

Descriptors: (*Computers, *Crime detection), Data, Information, Laws, Legal aspects, Operation, Security.

For abstract, see NSA 30 04, number 12092.

5E. Human Factors Engineering

AD-783 803/0GA PC$3.25/MF$2.25
Aerospace Medical Research Lab Wright-Patterson AFB Ohio
MEASUREMENT, EVALUATION, PREDICTION AND IMPROVEMENT OF AIRCRAFT RIDE.
Final technical rept.,
Alvin B. Broderson. Aug 73, 43p Rept no. AMRL-TR-73-4

Descriptors: *Aerospace medicine, *Military aircraft, *Human factors engineering, Tolerances(Physiology), Vibration, Gusts, Aerodynamic loading, Aircraft seats, Vibration isolators, Air frames.

The interrelated roles of the aircraft designer, flight dynamics specialist, and biomedical researcher are discussed as they relate to the various problems, definitions, procedures, and needs associated with measuring, evaluating, predicting, and improving aircraft ride. The importance of precise definitions and taxonomy for overall problem solution is emphasized. Standard and accurate vibration measurement techniques are discussed. Evaluation of ride in existing aircraft is discussed and distinguished from prediction of ride in proposed aircraft in regard to appropriate goals, limits, and criteria. Proper approaches for using gust environment, aircraft, and human frequency characteristics are discussed. Seat cushion, active isolation, and airframe dynamic control techniques for improving ride are discussed. Recommendations are made for improved biomedical research efforts to determine how and why vibration adversely affects aircraft pilots, crew and passengers, with emphasis on the need for closer dialogue and planning between the originator and user of biomedical research related to problems of aircraft ride. (Author)

COO-910-35 PC$4.00/MF$2.25
Minnesota Univ., St. Paul Coll. of Veterinary Medicine.
BOVINE LYMPHOCYTIC LEUKEMIA: STUDIES OF ETIOLOGY PATHOGENESIS, AND MODE OF TRANSMISSION. PROGRESS REPORT NO. 14, JULY 1973--JULY 1974.
D. K. Sorensen. 30 Apr 74, 16p
Contract AT(11-1)-910

Descriptors: (*Leukemia, *Etiology), (*Cattle, Leukemia), Lymphatic system.

For abstract, see NSA 30 04, number 12115.

5F. Humanities

PB-234 537/9GA PC$5.50/MF$2.25
National Park Service, Washington, D.C.
BIG JUNIPER HOUSE OF MESA VERDE, COLORADO. WETHERILL MESA EXCAVATIONS.
Final rept.,
Jervis D. Swannack, Jr. 1969, 189p Archeological Research SER-7-C
Library of Congress Catalog Card No. 77-600350.

Descriptors: *Archeology, *Mesa Verde National Park, *National parks, *Excavation, Buildings, Colorado.
Identifiers: Wetherill Mesa project.

This is the third volume in a series covering the Wetherill Mesa Project at Mesa Verde National Park, Colorado. It is devoted entirely to one pueblo site--a mesa top site. Upon excavation, it became obvious that the pueblo would be unsited for an exhibit in the park's interpretation program. It had been occupied continuously for some 250 years, and the building styles were not clearly differentiated stratigraphically.

PB-234 538/7GA PC$13.50/MF$2.25
National Park Service, Washington, D.C.
LIKE-A-FISHHOOK VILLAGE AND FORT BERTHOLD GARRISON RESERVOIR NORTH DAKOTA.
Final rept.,
Hubert G. Smith. 1972, 207p Anthropological Papers-2
Library of Congress Catalog Card No. 76-601958.

Descriptors: *Archaeology, *National parks, *Excavation, North Dakota.
Identifiers: *American Indians.

The monograph reports salvage archeological work on the former earth-lodge settlement of the Hidatsa, Mandan, and Arikara Indians known both as Like-A-Fishhook Village and as Fort Barthold Indian Village. One of the important historic sites of the Upper Missouri Valley, this village remained for more than 40 years the chief example of a distinctive native culture. Abandonment of the village marked the close of a decisive era of Indian history in the Northern Plains. The report follows the historical and archeological evidence of the spread of European peoples at the expense of indigenous populations and the extinguishment of native cultures.

PB-234 539/5GA PC$18.00/MF$2.25
National Park Service, Washington, D.C.
MUG HOUSE, MESA VERDE NATIONAL PARK, COLORADO. WETHERILL MESA EXCAVATIONS.
Final rept.,
Arthur H. Rohn. 1971, 297p Archeological Research Ser-7-D
Library of Congress Catalog Card No. 70-600351.

Descriptors: *Archaeology, *Mesa Verde National Park, *National parks, *Excavation, Buildings, Colorado.
Identifiers: Wetherill Mesa project.

The fourth in a series of books on the Wetherill Mesa Project in Mesa Verde National Park, Colorado, this report details excavations of one of the cliff sites. From the four kinds of social groupings discernible at this site, some aspects of social organization can be correlated in varying degrees.

PB-234 540/3GA PC$11.75/MF$2.25
National Park Service, Washington, D.C.
EXCAVATIONS AT TSE-TA'A CANYON DE CHELLY NATIONAL MONUMENT, ARIZONA.
Final rept.,
Charlie R. Steen. 1966, 174p Archeological Research Ser-9

Descriptors: *Canyon de Chelly National Monument, *Archaeology, Arizona, Excavation, Pottery, Textiles, Bones, American Indians.

The book constitutes the final report of archeological excavations carried out during two digging seasons (1949 and 1950) to recover artifacts and information from Tse-Ta'a that were about to be destroyed by the adjacent Rio de Chelly. The excavations brought to light 59 structures that ranged from a possible Basketmaker II slab cist to modern Navajo corncribs. Because the excavation was for salvage, no attempts were made to preserve any of the site for interpreatation.

PB-234 541/1GA PC$6.75/MF$2.25
National Park Service, Washington, D.C.
ENVIRONMENT OF MESA VERDE, COLORADO. WETHERILL MESA STUDIES.
Final rept.,
James A. Erdman, Charles L. Douglas, and John W. Marr. 1969, 74p Archeological Research Ser-7-B
Library of Congress Catalog Card No. 72-600243.

Descriptors: *Mesa Verde National Park, *National parks, Colorado, Archaeology, Geology, Soils, Vegetation, Climate, Environments.
Identifiers: Wetherill Mesa project.

The second in a series of reports on the investigations of the Wetherill Mesa Project, this volume covers not only the basic data on geology and soils, vegetation, and climate, but also compares environmental similarities and differences between sites, and discusses the areas environment during its prehistoric occupation.

PB-234 542/9GA PC$14.75/MF$2.25
National Park Service, Washington, D.C.
THE ARCHEOLOGICAL SURVEY OF WETHERILL MESA MESA VERDE NATIONAL PARK COLORADO.
Final rept.,
Alden C. Hayes. 1964, 233p Archeological Research Ser-7-A

Descriptors: *Mesa Verde National Park, *Archaeology, Colorado, National parks, Excavation, Ceramics, Textiles, Bones.
Identifiers: Wetherill Mesa project.

The report provides an overview of the National Geographic Society-funded Wetherill Mesa Project in Mesa Verde National Park, Colorado. The prologue discusses the goals and tactics of the project while the main report offers an inventory of the mesa's resources.

5G. Linguistics

AD-783 548/1GA PC$6.50/MF$2.25
Haskins Labs Inc New Haven Conn
SPEECH RESEARCH.
Status rept. Jan-Jun 74,
Franklin S. Cooper. Jul 74, 275p Rept no. SR-37/38(1974)
Contract N00014-67-A-0129-0001, Grant PHS-DE-01774
Sponsored in part by Advanced Research Projects Agency, Arlington, Va., Veterans Administration, Washington, D. C., Grants PHS-Hd-01994, PHS-RR-5596, Contract PHS-71-2420, and Grant NSF-GS-28354. See also report dated Dec 73, AD-774 799.

Descriptors: *Speech, *Phonology, Linguistics, Phonetics, Speech recognition, Learning, Hearing, Music, Auditory perception, Infants, Language, Throat, Electromyography.
Identifiers: *Speech articulation, Speech disorders, Stuttering.

The report (1 January-30 June 1974) is one of a regular series on the status and progress of studies on the nature of speech, instrumentation for its investigation, and practical applications. (Modified author abstract)

AD-783 899/8GA PC$3.75/MF$2.25
Perception Technology Corp Winchester Mass
PERCEPTUAL CONTINUOUS SPEECH RECOGNITION.
Final rept. Oct 72-Jan 73,
H. Yilmaz, L. Ferber, W. Park, H. Kellett, and E. Koprucu. Jul 74, 65p* RADC-TR-74-180
Contract F30602-73-C-0049

Descriptors: *Speech recognition, *Phonetics, Pattern recognition, Linguistics, Sound pitch, Computer programming.
Identifiers: *Speech articulation.

A speech recognition system based on a perceptual respresentation of speech is presented. The objective is to study and investigate the recognition of connected speech composed of a context-free limited vocabulary. The generalization will permit vocabularies of multi-syllable words to be recognized with a high degree of speaker independence. A new method of segmentation is presented based on the recognition of vowels and vowel-like phonetic segments. This is coupled with a speaker transformation that maps the vowels of each speaker into a standard space thus reducing inter-speaker variations. At the present the transformation and segmentation procedures are based on the vowels only. However, a method of extending these principles to the recognition of consonants is presented. (Modified author abstract)

PB-235 179/9GA PC$3.75/MF$2.25
Pittsburgh Univ., Pa. School of Medicine.
CONSONANT CONFUSIONS IN NOISE: A STUDY OF PERCEPTUAL FEATURES,
Marilyn D. Wang, and Robert C. Bilger. 1971, 70p
SRS-14-55126-001
Grant SRS-14-55126

Descriptors: *Auditory perception, *Speech recognition, Phonology, Speech analysis, Linguistics, Bibliographies.

The study tested the hypothesis that, when the internal redundancy of feature systems is taken into account, certain articulatory and phonological features of consonants consistently account for transmitted information better than other closely related features. Sixteen subjects were assigned to groups listening to recorded nonsense syllables representing all phonologically permissible cv and vc syllables. Results of the analyses indicated that, for most confusion matrices, several feature systems can be shown to account equally well for transmitted information and that, across syllable sets and listening conditions, there is little consistency in the identification of perceptually important features. A bibliography is included.

5I. Personnel Selection, Training, and Evaluation

AD-783 532/5GA PC$4.00/MF$2.25
Naval Ship Systems Command Washington D C Personnel and Training Analysis Office
REVISED MANNING REQUIREMENTS AND PERSONNEL COST SAVINGS FOR THE LEASED LDMX/NAVCOMPARS SYSTEMS.
Rept. for Dec 73-May 74,
Mark L. Vecellio. Jun 74, 88p Rept no. 047C-74

Descriptors: *Communication and radio systems, *Manpower, Training, Automation, Personnel development, Cost analysis, Naval shore facilities, Job analysis, Requirements.

The report updates the results of an earlier investigation of the manning and training requirements for operation of the Local Digital Message Exchange (LDMX) and Naval Communications Processing and Routing (NAVCOMPARS) systems. The information presented in this study is expected to be useful to Navy planners in developing changes to activity manpower authorizations, personnel acquisition and distribution plans, and in determining student training loads and requirements. An additional purpose of this personnel-oriented view of the automated communications systems is to examine and highlight areas wherein personnel savings can be made.

AD-783 609/1GA PC$3.75/MF$2.25
Rand Corp Santa Monica Calif
AIR RESERVE FORCES PERSONNEL STUDY: VOLUME I. THE PERSONNEL STRUCTURE AND POSTURE OF THE AIR NATIONAL GUARD AND THE AIR FORCE RESERVE,
Bernard Rostker. Apr 73, 71p Rept no. R-1049-PR
Contract F44620-73-C-0011

Descriptors: *Air force personnel, *Military reserves, Manpower, Research management, Projection, Planning, Force level, Technicians.

The report examines the reserve personnel system and develops personnel flows. Career airmen appear to be in short supply. About 40 percent of authorized positions are being filled by low-grade airmen. Non-prior service airmen on their first tour of service constitute about 73 percent of the Air Reserve Force; only 57 percent for the regular Air Force. A majority of personnel, after eight years of service, are civilian technicians who tend to remain in the reserves past normal retirement. Six major personnel flows determine the personnel posture of the Air Reserve Forces. Estimation of entry flows and service continuation rates were obtained by matching Guard and Reserve personnel records and active Air Force loss records for the FY 1970 period. Projections show yearly accession requirements are between 13,000 and 18,000 airmen.

AD-783 629/9GA PC$3.25/MF$2.25
Rand Corp Santa Monica Calif
A METHOD FOR LEAST-COST SCHEDULING OF PERSONNEL THROUGH TRAINING COURSE SEQUENCES,
Chris D. Roach. Jun 74, 33p Rept no. R-1399-PR
Contract F44620-63-C-0011

Descriptors: *Personnel, *Travel time, *Cost analysis, *Decision making, Education, Computer programming, Algorithms, Transportation, Integer programming.

The report presents an algorithm to find the five least-cost sequences for scheduling military personnel through a series of courses where the costs incurred are transportation costs. The algorithm adapts the implicit enumeration approach of integer programming to this pipeline flow problem and will require at least (n - 2.8)n factorial fewer computations than total enumeration, where n is the number of courses. It can also be used to determine the least-cost sequences when mixed travel modes are involved. (Author)

AD-783 722/2GA PC$3.00/MF$2.25
Stanford Univ Calif Graduate School of Business
THE RELATION OF VERBAL AND QUANTITATIVE SCORES TO MANAGER SUCCESS.
Technical rept. no. 5, 25 Jun-9 Aug 74,
Thomas W. Harrell, and Margaret S. Harrell. 9 Aug 74, 19p
Contract N00014-67-A-0112-0073

Descriptors: *Supervisors, *Personality, Personality tests, Correlation techniques.
Identifiers: *Managers, Successful careers.

A longitudinal study at ten years out of graduate school has been completed for 205 men. This has related their Verbal (V) and Quantitative (Q) scores on the Admissions Test for Graduate Study in Business (ATGSB) to several criteria of business manager success. Noted is the negative relation of V scores to reaching a General Manager (GM) position and to compensation. The lowest decile in V exceeded the highest decile in both criteria. This counter-intuitive finding can be understood in the non-cognitive personality pattern present. Lowest decile men were superior in ascendance, social extroversion, in scores on a decisiveness scale, preference as friends, and had more of an authoritarian personality. (Author)

AD-783 753/7GA PC$3.25/MF$2.25
Federal Aviation Administration Washington D C Office of Management Systems
1973 U.S. CIVIL AIRMEN STATISTICS.
Jun 74, 40p
See also report dated Oct 73, AD-772 512.

Descriptors: *Civil aviation, *Flight crews, Statistical data, Pilots, Males, Females, Helicopters, Gliders, Commercial planes, Transport aircraft.
Identifiers: *Pilot certificates, *Nonpilot certificates, *Airman certificates.

The 1973 U.S. Civil Airmen Statistics is published to meet the demands of FAA, other government agencies, and industry for more detailed airmen statistics than those published in other FAA reports. The collection and dissemination of expanded aircraft data have created a need for more compatible airmen statistics. This information is required to establish more valid relationships between aircraft and airmen and to furnish more realistic bench marks for measuring trends in the civil airmen counts and their overall effect on the various segments of aviation. Statistics pertaining to airmen, both pilot and nonpilot, are presented.

AD-783 786/7GA PC$7.50/MF$2.25
Naval Postgraduate School Monterey Calif
CHARACTERISTICS TO EVALUATE THE QUALITY ASSURANCE WORKFORCE.
Master's thesis,
Craig Otis Reynolds. Jun 74, 90p

Descriptors: *Quality assurance, *Naval personnel, *Personnel selection, *Logistics planning, Personnel management, Job analysis, Models, Organizations, Optimization, Education, Aptitudes, Military requirements, Theses.

Quality assurance is a vital part of any Navy contract administration activity. It is essential that the personnel involved in quality assurance be of extremely high caliber. The purpose of this paper is to develop a model of the educational background of an ideal quality assurance man. The paper outlines the functions which might be required of each job in the organization. The model is then developed, and an existing quality assurance organization is compared to the model. (Modified author abstract)

AD-783 810/5GA PC$7.75/MF$2.25
Naval Postgraduate School Monterey Calif
PREDICTORS OF ACADEMIC SUCCESS OF GRADUATE STUDENTS IN THE COMMUNICATIONS MANAGEMENT CURRICULUM OF THE U.S. NAVAL POSTGRADUATE SCHOOL.
Master's thesis,
Jon Leslie Cook. Sep 74, 95p

Descriptors: *Students, *Graduates, *Personnel selection, Management training, Aptitudes, Achievement tests, Performance(Human), Computer programming, Predictions, Questionnaires, Theses.
Identifiers: Communications management.

A study of communications management students was conducted using a specially constructed biographical questionnaire, the Strong Vocational Interest Blank, the Graduate Record Examination and undergraduate academic performance to develop a procedure for selecting U.S. naval officers for the Communications Management cur-

riculum at the U.S. Naval Postgraduate School. The variables selected for predicting academic success were: third and fourth year undergraduate grade-point averages, undergraduate major in engineering (yes or no), and graduate of the U.S. Naval Academy (yes or no). Tables are presented to facilitate the use of the method developed. The report also summarizes the relationship to two criteria, academic performance and satisfaction, of all the instruments and information used and recommends the direction of future research. (Modified author abstract)

AD-783 843/6GA PC$3.25/MF$2.25
Texas Christian Univ Fort Worth Inst for the Study of Cognitive Systems
FACTORS RELATING TO THE DEVELOPMENT OF OPTIMAL INSTRUCTIONAL INFORMATION SEQUENCES.
Final rept. 1 Apr-31 Dec 73,
Donald F. Danserau, Selby H. Evans, Tomme A. Actkinson, and Gary L. Long. Jul 74, 41p
AFHRL-TR-73-51(II)
Contract F41609-73-C-0023
See also AD-777 832.

Descriptors: *Perception(Psychology), *Computer aided instruction, *Information processing, *Teaching methods, Optimization, Difficulty, Information systems, Analysis of variance, Students, Performance(Human), Reading, Factor analysis, Human factors engineering.
Identifiers: Difficulty levels, Information complexity, Inscal multidimensional scaling.

Inscal multidimensional scaling was shown to be of value with respect to (1) defining the information complexity of technical, (2) developing sequences of key concepts within technical material, and (3) providing an index of expert inter-rater concensus. Inscal provides an indication of the correspondence between experts' understanding of concept interrelationships and students' understanding of concept interrelationships. Major findings from the final phase indicated (1) alternative sequences of instructional material influenced student performance, (2) pictorial technical information sequences resulted in small performance differences when compared to verbal print sequences, (3) technical information difficulty debilated student performance, (4) student reading aptitude was significantly related to student performance under both pictorial and verbal print presentation modalities, and (5) instructional sequences did not interact with student aptitude. (Author)

AD-783 845/1GA PC$3.75/MF$2.25
Texas Univ Austin Computer-Assisted Instruction Lab
INDIVIDUAL DIFFERENCES AND LEARNER CONTROL. II. INVESTIGATION OF CONTROL OVER PICTORIAL MEDIATORS IN COMPUTER-ASSISTED INSTRUCTION.
Final rept. Oct-Dec 73,
Wilson A. Judd, Harold F. O'Neil, Jr., and Philip F. Spelt. Jul 74, 72p AFHRL-TR-74-30
Contract F41609-73-C-0032
See also Part 1, AD-783 844.

Descriptors: *Computer aided instruction, *Individualized training, *Learning, Performance(Human), Anxiety, Control systems, Psychological tests, Pictures.
Identifiers: *Individual differences, *Task performance, *Learner control, Edible plant identification, Pictorial mediators.

The research was designed to investigate the impact of learner control on performance and anxiety in a computer-assisted instruction task. The research was divided into three phases. The results of Phase 3 are reported. The learning task was the identification of edible plants and their critical features and edible parts. Experimental hypotheses centered on the affective advantages of learner control, personality variables which influence the use of learner control, and the instructional effectiveness of pictorial mediators under learner control. Three experimental groups were used. (Modified author abstract)

AD-783 846/9GA PC$3.00/MF$2.25
Air Force Human Resources Lab Brooks AFB Tex
CORRELATES OF BARBITURATE USE.
Interim rept. Sep 71-Nov 73,
Jacqualyn R. Saunders, Bart M. Vitola, and Cecil J. Mullins. Mar 74, 22p Rept no. AFHRL-TR-74-21

Descriptors: *Drug abuse, *Barbiturates, *Air Force personnel, *Correlation techniques, Geographic areas, Religion, Enlisted personnel, Aging(Physiology), Aptitudes, Ethnic groups, Education, Drugs, Performance(Human), Air Force research, Statistical data.

A sample of 448 self-admitted pre-service barbiturate users was compared with a control sample of airmen with no known record of drug abuse. Within the sample of barbiturate users, several variables were examined to see if they were associated with degree of barbiturate use. The barbiturate sample differs significantly from the control sample in that barbiturate users are disproportionately represented in the North-Northeast and Far West-Pacific Coast enlistment areas, they more often indicate no religious preference, and they enlist at a younger age. Degree of barbiturate use is negatively associated with aptitude, educational level, and with measures of success in the Air Force. However, degree of barbiturate use is positively associated with the use of other drugs. (Author)

AD-783 847/7GA PC$3.25/MF$2.25
American Institutes for Research Silver Spring Md
A METHOD FOR DETERMINING TASK STRATEGIES.
Final rept. Sep 71-Jun 73,
Robert B. Miller. May 74, 50p AFHRL-TR-74-26
Contract F33615-72-C-1014

Descriptors: *Job analysis, *Personnel management, *Human factors engineering, Scientific research, Training, Optimization, Methodology, Theory, Reviews.
Identifiers: Task strategies.

The study is an extension of task analysis methodology. The concept of strategic principles implicit in the job activities of highly proficient performers is examined with the intent of improving training. The goal is to identify or invent such strategies, as appropriate, and then proceed with training encouraging use of them. A set of 25 information processing functions is described along with examples of strategic principles and training implications. Certain other strategic principles not readily interpretable in information processing terms are presented. An analytic procedure for determining and/or devising strategies is provided, and suggestions on the teaching and learning of strategies are summarized. (Author)

AD-783 920/2GA PC$3.00/MF$2.25
California Univ Irvine Graduate School of Administration
JOB SCOPE, JOB SATISFACTION, AND THE PROTESTANT ETHIC: A STUDY OF ENLISTED MEN IN THE U.S. NAVY.
Technical rept.,
Eugene F. Stone. Jun 74, 17p Rept no. TR-27
Contract N00014-69-A-0200-9001

Descriptors: *Job analysis, *Job satisfaction, *Religion, Naval personnel, Value, Correlation techniques.
Identifiers: Protestantism.

Questionnaire data were obtained from 149 enlisted men in the U.S. Navy. The job scope (JS) - satisfaction with the work itself (SWI) relationship was examined for the study's total sample and for subsamples created by grouping individuals on the basis of their belief in the Protestant Ethic (PE). It was hypothesized and found that the JS-SWI relationship was positive and significantly different from zero for the study's total sample and each of the three PE subsamples. Contrary to one of the study's hypotheses, PE did not moderate the JS-SWI relationship. The study's results were discussed in terms of their implications for theory and practice relating to job design. (Author)

AD-783 936/8GA PC$4.00/MF$2.25
Rand Corp Santa Monica Calif
ESTIMATING THE COST OF ON-THE-JOB TRAINING IN MILITARY OCCUPATIONS: A METHODOLOGY AND PILOT STUDY.
Interim rept.,
Robert M. Gay. Apr 74, 88p Rept no. R-1351-ARPA
Contract DAHC15-73-C-0181, ARPA Order-189-1

Descriptors: *Job training, *Military personnel, Cost analysis, Air Force training, Maintenance personnel, Manpower, Costs, Efficiency.
Identifiers: All volunteer military services, Productivity.

The conversion to an all-volunteer military has greatly increased interest in the cost of training first-term enlisted personnel. This report (1) develops a method of estimating military on-the-job training costs and relationships between these costs and the personal attributes of trainees, and (2) evaluates the feasibility of this technique. The method of estimation is a straightforward application of modern human capital theory; investment in OJT is measured as the present value of the sum of positive differences between an individual's military pay and productivity over time. In a pilot study conducted at Norton Air Force Base with members of the largest Air Force specialty (Aircraft Maintenance Specialists), OJT costs were estimated to average $6600 even though all trainees had attended an Air Force technical school costing about $3200. (Modified author abstract)

PB-234 557/7GA PC$9.75/MF$2.25
Urban Observatory of San Diego, Calif.
SAN DIEGO MANPOWER STUDY PROJECT: AN ASSESSMENT OF SAN DIEGO MANPOWER PROGRAMMING AND ITS FUTURE DIRECTIONS.
Final rept.,
Robert W. Peer, and Richard A. Foster. Dec 73, 134p UO-LCCM-SD-73-009
Contract HUD-H-987
Prepared in cooperation with San Diego State Univ., Calif. School of Social Work, and California State Univ., San Francisco.

Descriptors: *Urban planning, *Manpower programs, *California, Legislation, Government policies, Federal assistance programs, Labor force, Employment, Unemployment.
Identifiers: *San Diego(California).

The study was prepared for the San Diego Urban Observatory as part of their participation in the national Urban Observatory network. At the end of 1973, the long-awaited Comprehensive Employment and Training Act (CETA) was passed by Congress and signed into law. CETA provides for manpower revenue sharing at the local level. The effects on existing structures and programs are not yet clear. The first half of the report is devoted to portraying the scenes as it was in San Diego at the end of 1973. The second half discusses the local community's ability to react to CETA's new flexibility and includes recommendations for the future.

PB-234 558/5GA PC$10.50/MF$2.25
Albuquerque Urban Observatory, N. Mex.
COMPREHENSIVE MANPOWER PLANNING IN ALBUQUERQUE.
Final rept.,
Patrick H. McNamara, and Gloria Griffin-Mallory. Feb 74, 148p UO-LCCM-ALB-74-004, ALBU-18

Contract HUD-H-987

Descriptors: *Urban planning, *Manpower programs, *New Mexico, Government policies, Federal assistance programs, Employment, Unemployment, Labor force.
Identifiers: *Albuquerque(New Mexico).

Albuquerque, New Mexico, was among the nation's first cities to receive designation of a pilot comprehensive manpower program. This report is a study of the administrative transfer of loosely coordinated autonomous manpower programs to centralized city-county administration with policy direction by a local citizen planning board, the Manpower Planning Council. Two important processes are discussed. First, how federally funded autonomous programs were encompassed by a local administrative and local decision-making body. The second issue addressed is the process by which existing agencies and institutions were successfully made a part of the comprehensive program with a minimum of political disruption and alienation. The analysis of the administrative and political process leading to the operation of the Comprehensive Manpower Program could be helpful to other cities.

PB-234 628/6GA PC$3.25/MF$2.25
Urban Inst., Washington, D.C.
FORECASTING THE IMPACT OF TECHNOLOGICAL CHANGE ON MANPOWER UTILIZATION AND DISPLACEMENT: AN ANALYTIC SUMMARY.
Final rept.,
Alan Fechter. Mar 74, 47p* UI-1215-1 NSF/RDA-3-15-1
Grant NSF-DA-39439
See also PB-234 629.

Descriptors: *Manpower utilization, *Technological change, Technology innovations, Employment projections, Economic analysis, Forecasting models, Economic impact.
Identifiers: NTISUIDC.

The report assesses the existing capability to forecast shifts in employment opportunities caused by the diffusion of new technologies. General models of manpower forecasting are analyzed, focusing on the role technology plays in these models, and assessing the adaptability on the supply side of the labor markets. Forecasting models are also evaluated on the accuracy of their predictions compared to actual experience. Models are considered on the basis of their potential value in policy formation. The report lists five sources of error: inaccurate forecasts of future innovations, a theory of production which aggregates skills, inadequate skill measures, inability to identify which changes in skill mix and labor-productivity are due to technological change, and unreasonable assumptions in the forecasting models.

PB-234 629/4GA PC$4.50/MF$2.25
Urban Inst., Washington, D.C.
FORECASTING THE IMPACT OF TECHNOLOGICAL CHANGE ON MANPOWER UTILIZATION AND DISPLACEMENT: AN ANNOTATED BIBLIOGRAPHY.
Final rept.,
Valerie James, and Patricia Barry. May 74, 115p* UI-1215-2 NSF/RDA-3-15-2
Grant NSF-DA-39439
See also PB-234 628.

Descriptors: *Manpower utilization, *Technological change, *Bibliographies, Displacement, Technology innovation, Labor, Productivity, Manpower requirements, Forecasting models, Manpower resources.
Identifiers: NTISUIDC, *Annotated bibliographies.

An annotated bibliography accompanies a previous volume summarizing the present state-of-the-art in manpower forecasting under technological change. Part 1 consists of annotations of selected works key-worded, abstracted, and arranged in alphabetical order. The majority of these are concerned with forecasting manpower requirements and supply. Part 2 contains the complete bibliography, arranged in alphabetical order.

PB-234 721/9GA PC$5.35/MF$2.25
National Science Foundation, Washington, D.C. Div. of Science Resources Studies.
GRADUATE SCIENCE EDUCATION: STUDENT SUPPORT AND POSTDOCTORALS, FALL 1972.
Final rept.,
Penny D. Foster. Oct 73, 195p* NSF-73-315
Paper copy also available from GPO $2.85.

Descriptors: *Students, *Universities, *Education, Scientists, School enrollment, Financing, Surveys.
Identifiers: *Graduate study, Post doctoral education, Science education.

The report summarizes detailed information received in a survey of graduate education in the sciences which was conducted in the fall of 1972. It provides data on trends and patterns of support and postdoctoral appointments in all science Ph.D.-granting institutions in the U.S. Trend data were available from departments replying to the survey and applying for NSF traineeships in earlier years.

PB-234 855/5GA PC$3.75/MF$2.25
Arkansas Rehabilitation Service, Little Rock.
INTENSIVE FOLLOW-UP SERVICES TO MARGINAL WORKERS.
Final rept. 1 Jul 66-31 Mar 70.
May 70, 59p SRS-RD-2202-001
Grant SRS-RD-2202-G

Descriptors: *Rehabilitation, *Handicapped workers, *Placement, Counseling, Employment, Abilities, Performance evaluation, Vocational interests, Arkansas.
Identifiers: *Vocational rehabilitation, Mentally retarded persons, Physically handicapped persons.

The project (1966-1969) attempts to determine whether provision of intensive followup services to selected vocational rehabilitation clients subsequent to their selective job placement would enable them to retain their employment.

PB-234 856/3GA PC$4.75/MF$2.25
International Society for Rehabilitation of the Disabled, New York.
PLANNING FOR THE DECADE OF REHABILITATION: 1970-1980. NEW PATTERNS OF INTERNATIONAL SERVICE,
Final rept.,
Dorothy Warms, and Susan Hammerman. Jul 70, 142p SRS-RD-2293-001
Grant SRS-RD-2293-G

Descriptors: *Rehabilitation, *International organizations, Information systems, Handicapped persons, Mental disorders, Meetings.
Identifiers: Physically handicapped persons, Vocational rehabilitation.

The international research development project (1966-1969) of the International Society of Rehabilitation of the Disabled (ISRD) was established to study, evaluate, improve, and demonstrate methods of international communication which may assist in the improvement of rehabilitation services for the disabled in developing and developed countries. Activities included development of files on research on projects in rehabilitation, assessment of levels of services related to available resources, evaluation of the Eleventh World Congress, and an exploratory study of multilingual rehabilitation terminology references.

PB-234 857/1GA PC$3.00/MF$2.25
Maryland Div. of Vocational Rehabilitation, Baltimore.
A MOBILITY PROJECT WITH BLIND PUBLIC SCHOOL STUDENTS AND OTHER SELECTED REHABILITATION CLIENTS.
Final rept.,
George W. Keller. Jul 70, 21p SRS-RD-1843-001
Grant SRS-RD-1843-S

Descriptors: *Handicapped persons, *Blindness, *Rehabilitation, Instructors, Students, Maryland.
Identifiers: *Visually handicapped.

The project was designed to demonstrate the value of teaching modern mobility techniques to legally blind public school students and other vocational rehabilitation clients beyond school age. The setting for the project was the Maryland suburbs of the District of Columbia. Approximately one-third of those receiving training were students, although they consituted nearly 50% of the people who received intensive training.

PB-234 858/9GA PC$11.50/MF$2.25
Maryland Univ., College Park.
COUNSELING IN PROBATION AND PAROLE: A RESEARCH REPORT.
Final rept.,
George L. Marx, John F. Giblette, and Jane A. Stockdale. Aug 69, 168p
Grant SRS-RD-2426-G

Descriptors: *Counseling, *Rehabilitation, Probation, Adjustment(Psychology), Group therapy.
Identifiers: *Parolees.

A research project conducted in the Probation Office for the United States District Court for the District of Columbia was designed to obtain preliminary answers to three questions relating to whether clients with a particular configuration of personality traits could be observed to show greater improvement in one treatment mode as contrasted with the other. The treatment modes employed were individual and group counseling. The project was of two years duration and consisted of two separate but related counseling experiments.

PB-234 859/7GA PC$5.50/MF$2.25
Arkansas Rehabilitation Research and Training Center, Fayetteville.
ARKANSAS STUDIES IN VOCATIONAL REHABILITATION. SERIES I. EMPIRICALLY DERIVED REHABILITATION COUNSELOR SUBGROUPS AND THEIR BIOGRAPHICAL CORRELATES.
Special research rept.,
Stanford E. Rubin, Bill K. Richardson, and Brian Bolton. Apr 73, 49p
Grants SRS-12-55219, SRS-16-56812

Descriptors: *Counseling, *Professional personnel, Vocational guidance, Abilities, Job satisfaction, Rehabilitation, Interpersonal relations, Personality, Performance evaluation.
Identifiers: *Counselors, *Self evaluation.

The monograph focuses on counselor types derived by means of self-report data. Eighty-seven counselors employed in eleven rehabilitation agencies completed the counselor biographical information form which had questions on personal educational, employment, and professional development information and counselor-perceived proficiency and importance questionnaires. Seven major characteristics of the sample were reported.

PB-235 013/0GA PC$4.00/MF$2.25
National Industries for the Blind, New York.
MULTI-HANDICAPPED BLIND PERSONS CAN WORK. REPORT OF A RESEARCH AND DEMONSTRATION PROJECT EXPLORING THE VALUES AND LIMITATIONS OF A NEW PRODUCTS APPROACH TO THE REHABILITATION AND EMPLOYMENT PROBLEMS OF MULTI-HANDICAPPED BLIND PERSONS.
Final rept.,
Herbert Rusalem, and Harold Richterman. Jun 72, 86p SRS-14-55047-001

Grant SRS-14-55047

Descriptors: *Handicapped workers, *Blindness, Rehabilitation, Employment, Productivity, Personnel management, Efficiency, Product development.
Identifiers: *Visually handicapped, *Vocational rehabilitation.

A project (1968-1971) to discover ways to increase the job availability for the multihandicapped blind person and to prove that blind workshops are able to serve the needs of such persons found that, if certain mechanical changes were made in a blind workshop to accommodate the production of various new products which were developed in 37 major product groupings, many multihandicapped blind persons were able to participate in work programs. The project involved screening methods, product development engineering, rehabilitation techniques, and selection and modification of equipment.

PB-235 142/7GA PC$4.00/MF$2.25
Human Resources Center, Albertson, N.Y.
MATCHING JOB AND WORKER CHARACTERISTICS. WORK SUPPLEMENT FOR THE AGED.
Special rept.,
H. Viscardi, F. Gentile, G. Graham, and J. Block.
1973, 81p Rehabilitation Ser-6 SRS-12-55050-001
Grant SRS-12-55050

Descriptors: *Older workers, *Rehabilitation, Vocational guidance, Employment, Job analysis, Placement, Performance evaluation.
Identifiers: *Vocational rehabilitation, *Elderly persons.

The project (1969-1973), implemented the proposal that the needs and skills of older workers (over 55) could be matched with specific job requirements. It successfully placed 221 persons in part-time or temporary positions. A profile of successful clients was developed based on personal and employment data.

PB-235 144/3GA PC$3.75/MF$2.25
New York City Central Labor Council.
JOB DEVELOPMENT PROJECT.
Final rept.,
Gerald R. Waters, Sr., John J. Gehan, and Roberta A. Barnette. Jun 70, 70p SRS-RD-02370-001
Grant SRS-RD-02370

Descriptors: *Handicapped workers, *Rehabilitation, *Labor unions, Labor relations, Employment, Retirement.
Identifiers: *Disabled persons.

The job development project, a demonstration project (January 1967- December 1969) to develop labor-bossed rehabilitation services for disabled union members and their families, was successful in attaining satisfactory solutions to the vocational problems of 397 of 465 cases. It also conducted an intensive education program for union members and management. Type of impairment had no effect on outcome of rehabilitation. Age, skill level, and length of unemployment did have an effect on the probability of a successful conclusion.

TT-73-53000/02 PC$6.00/MF$2.25
Office of Education, Washington, D.C.
SELECTED BIBLIOGRAPHY AND ABSTRACTS OF EDUCATIONAL MATERIALS IN PAKISTAN. VOLUME 7, NUMBER 2, 1973. PERIOD COVERED APRIL-JUNE 1973.
1973, 57p
Trans. by Geti Saad. The above journal is translated on a regular basis. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Education, *Pakistan, Bibliographies, Translations, Planning, Languages, Libraries, Educational psychology, Abstracts.
Identifiers: Adult education, Higher education.

Contents: Administration, organization and financing of education; Adult education; Art education; Childhood education; Curriculum; Development of education; Education goals; Education planning; Education reforms; Elementary and secondary education; Examinations; Extra curricular activities; Higher education; Islamic education; Languages, teaching of; Libraries; Literacy; Philosophy of education; Professional education; Psychology; Sociology; Students problems; Teacher education; Teachers; Teaching methods and media; Technical education; Women's education; General; Textbooks (special section); Writers' index.

5J. Psychology (Individual and Group Behavior)

AD-783 549/9GA PC$3.75/MF$2.25
Michigan Univ Ann Arbor Inst for Social Research
DIFFERENCES IN ORGANIZATIONAL PRACTICES AND PREFERENCES IN THE NAVY BY RACE.
Technical rept.,
Warrington S. Parker, Jr. Jun 74, 65p
Contract N00014-67-A-0181-0048

Descriptors: *Race relations, *Attitudes(Psychology), Organization theory, Management, Supervisors, Performance(Human), Leadership, Behavior, Job satisfaction, Surveys.
Identifiers: *Interpersonal relations.

The study has as its major goal the investigation of differences in organizational practices, preferences, and felt racial discrimination by race and racial composition of work groups in the Navy. (Modified author abstract)

AD-783 550/7GA PC$3.25/MF$2.25
Denver Research Inst Colo
LEARNING AND RETENTION OF CONCEPTS FORMED FROM UNFAMILIAR VISUAL PATTERNS.
Final rept. 1 Oct 73-30 Sep 74,
Alma E. Lantz. Aug 74, 40p Rept no. DRI-2643
Contract N00014-67-A-0394-0010, ARPA Order-2234

Descriptors: *Memory(Psychology), *Pattern recognition, Visual perception, Retention(Psychology), Learning.
Identifiers: *Concept formation.

Two experiments were conducted to investigate the learning and retention of concepts formed from novel visual stimulus materials (wave-form patterns). The purpose of the first experiment was to scale sets of wave forms as a function of difficulty, i.e., Ss were shown a prototype wave form and were asked to give same-different judgments for subsequent wave forms. On the basis of these results, sets of 'simple' and 'difficult' instances of concepts were chosen. In the second experiment, Ss learned four wave-form concepts with either simple or difficult instances over a four-day period and were tested for retention after periods of one, three, and ten days. (Modified author abstract)

AD-783 553/1GA PC$3.75/MF$2.25
Minnesota Univ Minneapolis Dept of Psychology
AN EMPIRICAL INVESTIGATION OF COMPUTER-ADMINISTERED PYRAMIDAL ABILITY TESTING.
Research rept.,
Kevin C. Larkin, and David J. Weiss. Jul 74, 64p
Rept no. RR-74-3
Contract N00014-67-A-0113-0029

Descriptors: *Aptitude tests, *Computer applications, *Adaptive systems, Students, Universities, Test methods, Sequential, Memory(Psychology), Psychological tests.
Identifiers: *Scoring systems.

Three pyramidal adaptive tests and a conventional peaked test were constructed and administered by time-shared computer to two separate groups of students enrolled in undergraduate psychology courses. Six different methods of scoring pyramidal tests were evaluated with respect to score distributions, stability, and the degree of relationship among scoring methods and between pyramidal scoring methods and scores on the conventional test. The effects of memory were also considered. (Modified author abstract)

AD-783 694/3GA PC$3.25/MF$2.25
Rochester Univ N Y Center for Visual Science
CRITICAL DURATION FOR RESOLUTION OF ACUITY TARGETS.
Technical rept.,
John Lott Brown, and John E. Black. Jul 74, 30p
Rept no. TR-74-4
Contract N00014-67-A-0398-0007

Descriptors: *Visual acuity, *Target recognition, Visual perception, Adaptation(Physiology), Thresholds(Physiology), Luminescence.
Identifiers: *Dark adaptation, Critical flicker fusion.

Line grating patterns which illuminated a 1 degree test field centered 1.5 degree from the fovea were presented in either of two orientations for various flash durations of from 2 to 1000 msec. Grating pattern frequencies of from 2 to 10 cycles per degree were used. Luminance thresholds for correct identification of grating orientation were measured in the dark adapted eye and against mesopic and low photopic background luminances. The critical duration within which temporal summation occurred was most significantly influenced by level of adaptation, being longer the lower the adaptation level. This was true for all spatial frequencies investigated, including the highest for which discrimination always depended upon cones. (Modified author abstract)

AD-783 775/0GA PC$6.25/MF$2.25
Naval Postgraduate School Monterey Calif
PERSONALITY AND PERFORMANCE.
Master's thesis,
Jeffrey Wiley Crews, and Jeffrey William Cummings. Jun 74, 65p

Descriptors: *Personality tests, *Performance(Human), Theses, Naval personnel, Naval training.
Identifiers: Evaluation.

The Sixteen Personality Factors Questionnaire (16PF) and the Performance Evaluation Report (PER), two survey devices used by the U.S. Naval Academy were critically evaluated. The hypothesis that personality as measured by the 16PF could be used to predict future fleet performance as measured by the PER was investigated. This analysis suggested little that would indicate a relationship between personality and performance as they are measured by the two surveys. Performance and personality could be related, but the important aspects of these qualities perhaps are not being measured by the survey devices. The motive for seeking a predictive relationship was also addressed. Within the context of the Academy's current training program, the discovery of such a predictive relationship would have little benefit in assessing how well the Academy is preparing officers for fleet duties. A job descriptive inventory of junior officers duties, and evaluation of graduates in these areas would better satisfy that purpose. (Author)

AD-783 792/5GA PC$8.75/MF$2.25
Naval Postgraduate School Monterey Calif
BIRTH ORDER AND ACHIEVEMENT: A STUDY OF THE EFFECTS OF FAMILY CONSTELLATION AND RELATED VARIABLES ON THE ACHIEVEMENT OF OFFICER STUDENTS AT THE NAVAL POSTGRADUATE SCHOOL.
Master's thesis,

William James Dooley, and Timothy Aloysius Murphy. Jun 74, 111p

Descriptors: *Aptitudes, *Naval personnel, *Students, *Officer personnel, Comparators, Birth, Performance(Human), Background, Theses.
Identifiers: *Sibling comparisons, *Birth order, Family relations.

A study was made possible differences between the achievement of first-, only-, and last-born children. Middle-born children appeared to do less well in academic achievement, but their occupational achievement did not differ significantly from the other birth-order groups. Sibling-identification may affect the occupational achievement of last-born offspring, while parental activity appears to influence the achievement of first- and only-born children. Other relationships are also discussed. (Modified author abstract)

AD-783 814/7GA PC$7.00/MF$2.25
Naval Postgraduate School Monterey Calif
THE DEVELOPMENT AND TESTING OF A LEADERSHIP EFFECTIVENESS MODEL.
Master's thesis,
John Hugh Quinlan. Jun 74, 79p

Descriptors: *Leadership, Models, Performance(Human), Theses, Naval research, Effectiveness, Attitudes(Psychology), Predictions, Questionnaires, Naval personnel.

A leadership effectiveness model was developed using a measure of empathy, two expressive measures of leadership and an index of leadership ability. The two expressive measures of leadership attitudes were 'consideration' and 'initiating structure,' taken from the Leadership Opinion Questionnaire. Sixty-four Naval officers were employed as subjects to test the leadership effectiveness model and the research hypothesis that those individuals high in leadership ability would be high in empathy, consideration, and initiating structure. The statistical results of the research project appear to support the hypothesis. Those technically and administratively trained individuals who are in tune with the concerns of their subordinates thus appear to be more capable of effectively selecting the situationally correct means of guiding their subordinates and thus perform better in a leadership role. (Author)

AD-783 816/2GA PC$8.50/MF$2.25
Naval Postgraduate School Monterey Calif
THE THAI ATTITUDE TOWARD WORK AND AUTHORITY (A PILOT STUDY).
Master's thesis,
Sompun Ruangvaidya. Jun 74, 106p

Descriptors: *Thailand, *Attitudes(Psychology), Officer personnel, Naval personnel, Theses, Work, Semantics, Sociology.
Identifiers: Authoritarianism.

Three groups of subjects (N=94) are tested by a semantic differential form and a sentence completion form. The first group consists of U.S. Naval officers (N=35). The other two groups comprise Thai officers (N=30) and Thai NCO's (N=29). The semantic differential form and sentence completion form are designed to evaluate the subjects' attitude toward work and authority; in conjunction with each other. Results indicate that subjects responses are comparable in the two vernaculars. The Thai groups appear to express more favorable attitude toward work and authority concepts than the U.S. group; the Thai NCO's more favorable than the Thai officers. (Author)

AD-783 837/8GA PC$5.50/MF$2.25
Naval Postgraduate School Monterey Calif
STRUCTURAL EVOLUTION: THE EFFECT OF ORGANIZATION SIZE ON COMPLEXITY ACROSS TIME.
Master's thesis,
Edward Moore, Jr. Jun 74, 47p

Descriptors: *Organization theory, *Roles(Behavior), *Evolution(Development), Mathematical prediction, Statistical processes, Harmonic analysis, Pattern recognition, Methodology, Reviews, Data processing, Computer programming, Theses.
Identifiers: Bureaucracies.

Empirical studies of formal dimensions of organization structure have sought to discover patterns of association between factors that lead to increases in organization complexity. Sixty-eight years in the evolution of a formal organization were studied to determine the effects of organizational size on organizational complexity across time. The Kolmogorov-Smirnov statistic was used to test whether an expected rank-frequency distribution of roles could predict observed rank-frequency distributions. (Modified author abstract)

AD-783 844/4GA PC$4.50/MF$2.25
Texas Univ Austin Computer-Assisted Instruction Lab
INDIVIDUAL DIFFERENCES AND LEARNER CONTROL. I. PROGRAM DEVELOPMENT AND INVESTIGATION OF CONTROL OVER MNEMONICS IN COMPUTER-ASSISTED INSTRUCTION.
Interim rept. May-Oct 73,
Wilson A. Judd, Harold F. O'Neil, Jr., and Philip F. Spelt. Jul 74, 121p AFHRL-TR-74-3
Contract F41609-73-C-0032
See also Part 2, AD-783 845.

Descriptors: *Computer aided instruction, *Individualized training, *Memory(Psychology), Control systems, Performance(Human), Anxiety, Psychological tests, Word association, Vocabulary.
Identifiers: *Individual differences, *Learner control, *Mnemonics, Edible plant names.

The reported research was designed to investigate the impact of learner control on performance and anxiety in a computer-assisted instruction task. The research was divided into three phases, of which the first two are reported in this document. The first phase entailed the development of a two-hour computer-assisted instruction program on the identification of edible plants. The second was experimentation to determine the effectiveness of learner control. Four groups were used in the experimental design. (Modified author abstract)

AD-783 859/2GA PC$5.00/MF$2.25
Naval Postgraduate School Monterey Calif
THE EFFECT OF COLD ON AN INFORMATION PROCESSING TASK.
Master's thesis,
Duncan Hughes Meldrum. Jun 74, 37p

Descriptors: *Performance(Human), *Stress(Physiology), Cold weather, Information processing, Attention, Theses.
Identifiers: *Information processing (Psychology), *Cold stress.

An experiment concerning the effects of cold on performance of an information processing task was designed and conducted. Performance measures were obtained under temperature conditions of 72F, 45F and 35F. Performance was found to improve at the colder temperatures. An hypothesis relating arousal and cold to performance was postulated to account for the improved performance. (Author)

JPRS-62556 PC$3.00/MF$2.25
Joint Publications Research Service, Arlington, Va.
CHARACTERISTICS OF CONDITIONED REFLEX AND NEURO-CHEMICAL MECHANISMS OF NEGATIVE-EMOTIONAL TYPE RESPONSES,
F. P. Vedyaev, and L. M. Paikova. 24 Jul 74, 13p
Trans. of Fiziologichnyi Zhurnal (USSR) v19 n6 p730-737 1973.

Descriptors: *Reviews, *Conditioned responses, Rabbits, Laboratory animals, Experimental data, Conditioning(Learning), USSR, Translations, Reflexes, Neurochemistry, Behavior, Bioelectricity.

The report contains a review of a chronic study conducted on 40 rabbits to show conditioned reflex mechanisms of the formation of negative-emotional states as well as the role of neurochemical mechanisms of the brain limbic system.

PB-234 035/4GA PC$3.75/MF$2.25
System Development Corp., Santa Monica, Calif.
ACUTE TOLERANCE TO BEHAVIORAL IMPAIRMENT BY ALCOHOL IN MODERATE AND HEAVY DRINKERS.
Final rept. 30 Jun 72-19 Apr 74,
H. Moskowitz, J. Daily, and R. Henderson. Jun 74, 66p* SDC-TM-L-4970/013/00 DOT-HS-801 160
Contract DOT-HS-009-2-322
See also PB-219 251.

Descriptors: *Behavior, *Alcohols, *Motor vehicle operators, Automobiles, Personality, Heart rate, Performance(Human).
Identifiers: *Alcohol ingestion, Alcohol intoxication.

A total of 40 subjects were examined on five behavioral measures at approximately .02% blood alcohol concentration (BAC) intervals on both the rising and falling BAC curves. Twenty subjects were moderate drinkers tested to a maximum of .10% BAC and 20 subjects were heavy drinkers tested to a maximum of .15% BAC. Under these controlled conditions, for a given BAC, greater impairment was found during the rising BAC period than during the falling BAC period; this finding was consistent and statistically significant but is of little practical importance. Differences in impairment were equivalent to a change in BAC level of .01% to .02%. Performance differences due to past drinking practices (chronic tolerance) were far greater. It is of theoretical significance, however, that the degree of acute tolerance developed by chronic heavy drinkers was as great as or greater than that found for moderate drinkers, suggesting different mechanisms for acute and chronic tolerance.

PB-234 226/9GA PC$7.25/MF$2.25
Michigan Univ., Ann Arbor. Highway Safety Research Inst.
DEVELOPMENT OF A NATIONAL ITEM BANK FOR TESTS OF DRIVING KNOWLEDGE.
Final technical rept. Jul 70-Sep 73,
William T. Pollock, and Thomas L. McDole. Jul 74, 321p HSRI-001590-2 DOT-HS-801 159
Contract FH-11-7616

Descriptors: *Motor vehicle operators, *Test construction(Psychology), *Driver performance measures, Tests, Reviews, Operations, Data collection procedures, Licensing authorities, Passenger vehicles, Motor trucks, Motorcycles, Traffic safety, Highways, Psychological tests.

Materials intended for driving knowledge test development use by operational licensing and education agencies were prepared. Candidate test items were developed, using literature and operational practice sources, to reflect current state-of-knowledge with respect to principles of safe, efficient driving, to legal regulations, and to traffic control devices. Multiple-choice items were developed for testing drivers of passenger cars and light truck, motorcycles, and buses and trucks. An operational manual, 'Handbook for Driving Knowledge Testing', which includes multiple-choice items and tutorial test construction material, was prepared.

PB-234 637/7GA PC$4.50/MF$2.25
Temple Univ., Philadelphia, Pa.
THE DEVELOPMENT OF REASONING, MORAL JUDGEMENT, AND MORAL CON-

DUCT IN RETARDATES AND NORMALS. PHASE II,
Beth Stephens. May 72, 124p SRS-15-55121-001
Grant SRS-15-55121
See also PB-209 693.

Descriptors: *Reasoning, *Human behavior, *Cognition, Adolescence, Mental deficiency, Judgment, Behavior disorders, Learning, Values, Psychological tests.
Identifiers: *Mentally retarded persons, *Moral judgment.

The research was to compare and assess 2-year gains on measures of piagetian reasoning, moral judgment, and moral conduct in 75 normals (IQ 90-110) and 75 retardates (IQ 50-75) by analyzing wave one and two scores. Although reasoning continued to develop, it was at a decelerated pace in retardates, and not all normals achieved formal thought. Development of moral judgment continued into young adulthood for both groups. Misconduct scores for retardates equalled those of normals of equivalent mental age, however, retardates of 12 to 16 years gained in misconduct scores over the 2 years. There is an extensive bibliography.

PB-234 969/4GA PC$5.75/MF$2.25
Arkansas Rehabilitation Research and Training Center, Fayetteville.
ARKANSAS STUDIES IN VOCATIONAL REHABILITATION. SERIES I. MONOGRAPH XI. CLIENT-COUNSELOR INTERACTIONS, PATTERNS OF SERVICE, CLIENT OUTCOME. OVERVIEW AND SUMMARY.
Research rept.,
Jerold D. Bozarth, Stanford E. Rubin, Conrad G. Krauft, Bill K. Richardson, and Brian Bolton. Jun 73, 53p SRS-12-55219-007
Grant SRS-12-55219

Descriptors: *Counseling, *Rehabilitation, *Interpersonal relations, Abilities, Personality, Roles(Behavior), Vocational guidance, Effectiveness, Surveys, Arkansas.
Identifiers: *Vocational rehabilitation.

The overview and summary of a series of monographs focuses on client--counselor interaction in relation to client short-term psychological change. The studies used a sample of 444 clients of 87 counselors in 11 state rehabilitation agencies, relating cliet and counselor variables to various kinds of psychological change in clients. No statistically significant relationships were observed, although some general trends were found. A review of literature found that the most significant client predictors of success were age, amount of education, marital status, age at onset of disability, and type of disability.

PB-234 970/2GA PC$8.00/MF$2.25
Arkansas Rehabilitation Research and Training Center, Fayetteville.
ARKANSAS STUDIES IN VOCATIONAL REHABILITATION. SERIES I. MONOGRAPH VII. COUNSELING INTERVIEW BEHAVIOR OF EMPIRICALLY DERIVED SUB-GROUPS OF REHABILITATION COUNSELORS.
Research rept.,
Bill K. Richardson, Stanford E. Rubin, and Brian Bolton. Jun 73, 100p SRS-12-55219-004
Grant SRS-12-55219

Descriptors: *Counseling, *Rehabilitation, *Performance evaluation, Professional personnel, Roles(Behavior), Personality, Psychometrics, Surveys, Arkansas.
Identifiers: *Vocational rehabilitation.

The monograph studied counseling interview behavior of rehabilitation counselors grouped according to counselor-perceived proficiency in job performance skills, counselor-perceived importance of affective and cognitive counseling interview subrole behaviors, and counselor age, education, and experience. Information seeking and giving was emphasized in interview subrole behaviors.

PB-234 971/0GA PC$4.25/MF$2.25
Arkansas Rehabilitation Research and Training Center, Fayetteville.
ARKANSAS STUDIES IN VOCATIONAL REHABILITATION. SERIES I. MONOGRAPH VIII. CLIENT DEMOGRAPHIC CHARACTERISTICS AND PSYCHOLOGICAL STATUS AT INITIATION OF THE REHABILITATION PROCESS.
Research rept.,
Conrad C. Krauft, and Brian Bolton. May 73, 22p SRS-55219-003
Grant SRS-12-55219

Descriptors: *Counseling, *Rehabilitation, *Psychometrics, Attitudes, Personality, Character disorders, Psychological tests, Surveys, Arkansas.
Identifiers: *Vocational rehabilitation.

A sample of 444 rehabilitation clients from 11 states, categorized on the basis of 4 demographic variables (sex, marital status, age, and education), was tested on 10 psychological characteristics. The resulting description of client demographic and psychological characteristics was to be used in subsequent studies of the sample population. Psychological factors measured were self-concept, anxiety, superego strength, uninhibitedness, extroversion, social sensitivity, psychotic reactions, pathological defensiveness, neurosis, and severe maladjustment.

PB-234 972/8GA PC$6.25/MF$2.25
Arkansas Rehabilitation Research and Training Center, Fayetteville.
ARKANSAS STUDIES IN VOCATIONAL REHABILITATION. SERIES I. MONOGRAPH IX. TBE RELATIONSHIP OF CLIENT INITIAL PSYCHOLOGICAL FUNCTIONING, REHABILITATION COUNSELING BEHAVIOR, AND COUNSELOR-CLIENT CHARACTERISTICS.
Research rept.
Bill K. Richardson, Conrad C. Krauft, Brian Bolton, and Stanford E. Rubin. Jun 73, 61p SRS-55219-006
Grant SRS-12-55219

Descriptors: *Counseling, *Rehabilitation, *Interpersonal relations, Roles(Behavior), Personality, Reference groups, Psychometrics, Attitudes, Vocational guidance, Surveys, Arkansas.
Identifiers: *Vocational rehabilitation.

The study examined the relationship between client and counselor characteristics and client psychological funtioning. Sixty-six counselors and 444 clients in 11 states were studied. Counselors were categorized on the basis of demographic data and interview techniques and behavior. Clients were categorized by demographic data and psychological characteristics. No significant correlations were found between client and counselor characteristics and client initial psychological functioning. Tentative hypotheses were developed to explain certain tendencies of combinations of the factors considered.

PB-235 175/7GA PC$3.00/MF$2.25
Alaska Div. of Vocational Rehabilitation, Anchorage.
SOUTH CENTRAL ALASKA PROJECT. VOLUME III. SPECIAL EDUCATION, PSYCHIATRIC REHABILITATION, PUBLIC OFFENDER SUBPROJECTS, NOTES ON MINOR SUBPROJECTS.
Final rept.,
Carroll M. Craft, Harold W. James, and Franklin E. Campbell. May 70, 21p SRS-RD-01661-001
Grant SRS-RD-01661

Descriptors: *Rehabilitation, Vocational guidance, Patients, Psychological guidance, Mental deficiency, Education, Mental disorders, Alaska.
Identifiers: Public offenders.

Demonstration services provided by the South Central Alaska Project included a special education rehabilitation subproject providing a combination of public school education, vocational, and social rehabilitation for mentally retarded student-clients; psychiatric rehabilitation subproject introducing a rehabilitation approach to traditional psychiatric institutional treatment; public offender rehabilitation subproject for vocational rehabilitation of prison camp inmates; and development of a vocational interest test for use with clients of diverse cultures, disabilities, and experiences.

PB-235 177/3GA PC$4.00/MF$2.25
Kansas State Univ., Manhattan. Student Counseling Center.
A REHABILITATION LIVING UNIT IN A UNIVERSITY DORMITORY SETTING.
Final rept.,
E. Robert Sinnett, and Angela D. Sachson. Jun 70, 78p SRS-RD-02053-001
Grant SRS-RD-02053

Descriptors: *Rehabilitation, *Behavior disorders, Universities, Mental disorders, Students, Medical services, Emotions, Group psychology.
Identifiers: Group therapy.

A rehabilitation living unit for emotionally disturbed students at Kansas State University found that students can be provided satisfactory care without remarkable stigma or high risk to themselves or others, decreased the dropout rate, effected symptomatic improvement, and increased personal comfort. In seven semesters, 55 clients were treated. There were 37 student volunteers living in the unit and 51 clinical controls.

5K. Sociology

COM-71-80004-101/GA
PC-GPO/MF$2.25-NTIS
Bureau of the Census, Washington, D.C.
CENSUS OF POPULATION: 1970. LOW-INCOME NEIGHBORHOODS IN LARGE CITIES: 1970. SAN FRANCISCO AND OAKLAND, CALIF.
Supplementary rept.
Jun 74, 67p CENSUS-70-PC(S1)-101
Paper copy available from GPO $0.90.

Descriptors: *Census, *Population census, *Low income areas, *California, Neighborhoods, Tables(Data), Census tracts, Urban areas, Poverty level, Housing characteristics, Socioeconomic status.
Identifiers: *San Francisco(California), *Low income neighborhoods, *Oakland(California).

The report summarizes information on population and housing characteristics of low-income neighborhoods in San Francisco and Oakland, California. Low-income neighborhoods are subdivisions of low-income areas, which include all census tracts in which 20 percent or more of all persons were below the poverty level in 1969. These low-income neighborhoods generally consist of contiguous census tracts with a combined population of 20,000 or more. The neighborhood boundaries are based on current socioeconomic data and the recommendations of local agencies. The statistics shown in the detailed tables are part of a special tabulation of 1970 census data prepared for the Office of Economic Opportunity to determine the location of low-income areas and their neighborhood subdivisions, to analyze the characteristics of the residents of these neighborhoods, and to compare the residential characteristics of low-income neighborhoods and those of areas outside such neighborhoods.

COM-71-80004-89/GA PC-GPO/MF$2.25-NTIS
Bureau of the Census, Washington, D.C.
CENSUS OF POPULATION: 1970. LOW-INCOME NEIGHBORHOODS IN LARGE CITIES: 1970. NEW ORLEANS, LA.
Supplementary rept.
Jun 74, 65p CENSUS-70-PC(S1)-89

Paper copy available from GPO $0.90.

Descriptors: *Census, *Population census, *Low income areas, *Louisiana, Neighborhoods, Tables(Data), Census tracts, Urban areas, Poverty level, Housing characteristics, Socioeconomic status.
Identifiers: *New Orleans(Louisiana), *Low income neighborhoods.

The report summarizes information on population and housing characteristics of low-income neighborhoods in New Orleans. Low-income neighborhoods are subdivisions of low-income areas, which include all census tracts in which 20 percent or more of all persons were below the poverty level in 1969. These low-income neighborhoods generally consist of contiguous census tracts with a combined population of 20,000 or more. The neighborhood boundaries are based on current socioeconomic data and the recommendations of local agencies. The statistics shown in the detailed tables are part of a special tabulation of 1970 census data prepared for the Office of Economic Opportunity to determine the location of low-income areas and their neighborhood subdivisions, to analyze the characteristics of the residents of these neighborhoods, and to compare the residential characteristics of low-income neighborhoods and those of areas outside such neighborhoods.

COM-74-11393/7GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
THE ELDERLY. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1964-Jul 74,
Edward J. Lehmann. Sep 74, 155p* NTIS/WIN-74/068
Supersedes COM-73-11879.

Descriptors: *Social welfare, *Retirement, *Housing for the aged, *Medical services, Age, Aging(Biology), Travel, Residential buildings, Older workers, Planning, Senior citizens.
Identifiers: *Elderly persons.

The bibliography contains 139 selected abstracts of research reports retrieved using the NTIS online search system - NTISearch. Presented all reports dealing with the elderly which have been input into the NTIS collection since 1964. The studies primarily cover topics on transportation, health care, social services, housing, and welfare.

PB-234 349/9GA PC$4.75/MF$2.25
Tennessee State Planning Office, Nashville.
HOUSING MARKET OUTLOOK.
Jun 74, 144p TN-STAE-74-1017-6

Descriptors: *Housing market analysis, *Housing planning, *Tennessee, Surveys, Forecasting, State government, Housing studies.
Identifiers: Low income housing, Moderate income housing.

The housing market outlook shows the relative incidence of inadequate housing by Tennessee's local development districts and their constituent counties, where the new additions to the housing stock have gone and are anticipated to go from 1970 to 1975, and the cumulative housing need remaining at 1975 and 1980. Also contained in the Outlook are analyses of vacant units, seasonal homes, mobile homes, projected losses of units in the housing inventory, shifts in new construction types (single v. multi-family housing) over time, as well as estimates to show what kind of housing should be constructed in counties that may have a surplus of one type of housing but a deficit of another type to meet their total housing 'need'.

PB-234 610/4GA PC$3.75/MF$2.25
North Carolina State Univ., Raleigh. Urban Affairs and Community Services Center.
HOUSING MARKET ANALYSIS FOR THE CITY OF RALEIGH.
Final rept. 1970-80,
Henry K. Burgwyn. 1973, 65p

Descriptors: *Urban planning, *Housing market analysis, *North Carolina, Urban development, Requirements, Forecasting, Populations, Census.
Identifiers: *Raleigh(North Carolina), Low income housing, Moderate income housing.

The study is an analysis of the Raleigh housing market with particular emphasis on the low to moderate income portions. The analysis begins with a population projection and from this a household figure is derived. The objective is to determine the discrepancy between housing need, as forecast in 1980, and existing housing supply, based on 1970 census data.

PB-234 614/6GA PC$3.25/MF$2.25
Oklahoma Indian Affairs Commission, Oklahoma City.
A SUMMARY OF STATISTICS FOR THE INDIAN IN OKLAHOMA.
Final rept.,
Phillip R. Cross, Michael Meek, and Jean M. Vincent. May 74, 46p OK-OIAC-74-001

Descriptors: *Urban planning, *Census, *American Indians, *Oklahoma, Education, Health, Housing characteristics, Land use, Socioeconomic status, Employment.

The report is a compilation of available, computed, and categorized statistics on Indians in the State of Oklahoma. This covers by state, county, and tribe: Population, Education, Economics, Health, Housing, Land Base, and Development Programs.

PB-234 929/8GA PC$13.25/MF$2.25
Urban Observatory of Metropolitan Nashville-Univ. Centers, Tenn.
A COST-BENEFIT ANALYSIS OF HOUSING ALLOWANCES.
Final rept.,
G. S. Sahota. Feb 74, 204p UO-LCCM-NASH-74-014
Contract HUD-H-987

Descriptors: *Public assistance, *Housing, *Urban sociology, *Subsidy programs, Housing studies, Evaluation, Urban areas, State aid, Government policies, Benefit cost analysis.
Identifiers: *Housing allowances, *Housing and urban development research.

The study presents an analysis of three forms of housing allowances; the income-based plan, the rent- or mortgage-based assistance plan, and the housing-based plan. Costs of each plan are estimated and evaluated as are the benefits accrued. The cost-benefit analysis measures social costs, merit costs, and private costs. The study evaluates housing allowances in the context of the Nashville metropolitan area, however, most of the data is national in scope and applicability.

PB-234 968/6GA PC$4.00/MF$2.25
Illinois Div. of Vocational Rehabilitation, Springfield.
INTENSIVE SERVICES FOR THE SOCIALLY DISABLED. PROJECT PAYCHECK: ACCELERATING SERVICE IN THE GHETTO. EAST ST. LOUIS.
Final rept. 26 Jun 68-31 May 72,
Hubert L. Dunlap, and Brockman Schumacher.
May 72, 81p SRS-RD-12-55176-001
Grant SRS-RD-12-55176

Descriptors: *Blighted areas, *Central city, *Rehabilitation, Unemployment, Socially disadvantaged minorities, Ethnic groups, Ghetto employment, Social welfare, Urban areas, Economic conditions, Youths, Illinois, Paraprofessional personnel.
Identifiers: *Ghettos, *Job placement, Vocational rehabilitation.

The East St. Louis Project was opened in 1969 with the intent of demonstrating the effectiveness of service innovations in assisting and rehabilitating clients from the inner city. The Division of Vocational Rehabilitation Service Unit was relocated to the inner city area. An evaluation and orientation unit was opened which included work sampling, pre-vocational counseling, and group counseling with the use of video tape techniques. Paraprofessionals were utilized for a broad range of rehabilitation services which included recruitment, evaluation, development of training plans, job placement, and follow-up. Employer contacts and the development of job opportunities were included. Recommendations were for increased attention to disadvantaged youth, special efforts at job development in depressed areas, selection of appropriately ethnic staff, and a career ladder with training sequences for para-professionals. (Modified author abstract)

PB-235 011/4GA PC$3.00/MF$2.25
National Conference of Christians and Jews, New York.
INTO THE MAINSTREAM: BRIDGING THE GAP BETWEEN DISADVANTAGED YOUTH AND OTHER YOUTH IN THE METROPOLITAN WASHINGTON AREA.
Final rept.,
Leo Kramer. May 72, 24p SRS-12-55082-001
Grant SRS-12-55082

Descriptors: *Community relations, *Students, *Youths, *Police, Ethnic groups, Central city, Cultural deprivation, Employment, Problem solving, Social communication, District of Columbia, Maryland, Virginia.
Identifiers: *Youth programs.

The report describes a project which devised workable programs to bridge the gap between youths who were behaviorally disordered because of economic and racial isolation and other youths in the metropolitan Washington area and to improve the general understanding of the problems faced by these disadvantaged youth. Through these programs, students developed greater self-confidence, became more aware of the resources in the community for their needs, and became more responsible and better prepared for post-graduation years.

PB-235 012/2GA PC$4.75/MF$2.25
Greater Washington Educational Television Association, D.C.
JOBS 26: COMMUNITY TELEVISION PROGRAMMING AS A RESPONSIBLE SOCIAL FORCE.
Final rept.,
Marjorie S. Tinker. Mar 70, 150p SRS-RD-2873-001
Grant SRS-RD-2873-G

Descriptors: *Television broadcasting, *Ghetto employment, Visual aids, Employment, Program design, Community relations, Publicity, Counseling, Mass communication, Rehabilitation, District of Columbia.

A project (1968-1969) to demonstrate that television is an effective medium to transmit vital information to the disadvantaged about employment prospects, problems, and job training opportunities, found that television was effective in the stimulating the viewers' motivation to search for, apply for, and train for employment. The project tested the effectiveness of three separate television programs, which included information combined with entertainment, valid and justifiable messages, direct viewer participation, guest and film segments, word-of-mouth communication promotions, and cooperation with other community agencies.

PB-235 014/8GA PC$4.75/MF$2.25
Wisconsin Univ., Madison. Dept. of Sociology.
THE COORDINATION OF SERVICES FOR THE MENTALLY RETARDED: A COMPARISON OF FIVE COMMUNITY EFFORTS.
Final rept.,
Michael Aiken, Robert Dewar, Nancy DiTomaso, Jerald Hage, and Gerald Zeits. Jun 72, 148p SRS-15-55213-001
Grant SRS-15-55213

Descriptors: *Mental deficiency, *Rehabilitation, Social welfare, Organizations, Local government, California, Connecticut, Ohio, Wisconsin.
Identifiers: *Mentally retarded persons, *Mental health facilities.

Five research and demonstration projects, whose purpose was to bring about greater coordination of services for the mentally retarded in five metropolitan areas, are described and analyzed. Project context, structure, goals and means, implementation of services, and consequences were discussed for projects in San Francisco, Bridgeport, Milwaukee, Cleveland, and Los Angeles.

PB-235 015/5GA PC$4.00/MF$2.25
Hot Springs Rehabilitation Center, Ark.
A COMPREHENSIVE FACILITY PROGRAM FOR MULTIPLY HANDICAPPED DEAF ADULTS.
Final rept. 1 Jun 68-31 May 73,
B. Douglas Rice. May 73, 87p SRS-14-55216-001
Grants SRS-14-55215, SRS-16-56812

Descriptors: *Auditory defects, *Rehabilitation, Adults, Employment, Vocational guidance, Arkansas.
Identifiers: *Deaf persons, *Vocational rehabilitation.

A project (June 1968-May 1973) is reported whose purpose was to develop and implement rehabilitation service programs for the multiply-handicapped deaf within an ongoing comprehensive rehabilitation center and to investigate the effectiveness of these efforts demonstrated that they benefit substantially from services at a comprehensive rehabilitation center. The percentage of deaf clients completing vocational training was slightly higher than for the traditional clients.

PB-235 051/0GA PC$4.50/MF$2.25
Family Life Film Center of Connecticut, Inc., Fairfield.
'FILM DISCUSSION: A TECHNIQUE TO COMMUNICATE INFORMATION ABOUT REHABILITATION'.
Final rept. 25 Sep 68-31 Jan 70,
Charlotte S. Kaufman. Jan 70, 113p SRS-RD-02751-001
Grant SRS-RD-02751

Descriptors: *Motion pictures, *Rehabilitation, Visual communication, Vocational guidance, Handicapped persons, Training films, Connecticut, Visual aids.
Identifiers: Vocational rehabilitation.

The project (1968-1970) tests the effectiveness of the film-discussion technique in communicating information about vocational rehabilitation to a number of different groups in the Bridgeport, Connecticut area. It was found that the film-discussion programs were interesting, useful, and effective in promoting a better understanding of the problems and potentials of handicapped persons and in providing information about available rehabilitation services.

PB-235 052/8GA PC$5.00/MF$2.25
International Association of Rehabilitation Facilities, Washington, D.C.
VOLUNTEERS FOR PEOPLE IN NEED; REPORT OF THE KNOWLEDGE UTILIZATION CONFERENCE ON THE USE OF VOLUNTEERS IN VOCATIONAL REHABILITATION AND PUBLIC WELFARE AGENCIES HELD AT WASHINGTON, D.C. ON JUNE 4-6, 1972.
Final rept.
Nov 72, 170p SRS-22-55343-001
Grant SRS-22-55343

Descriptors: *Human resources, *Rehabilitation, *Meetings, Social welfare, Counseling, Child guidance, Handicapped persons, Law(Jurisprudence), Service workers.
Identifiers: *Volunteers, *Volunteer services, Vocational rehabilitation.

The report is the proceedings of the International Association of Rehabilitation Facilities (IARF) conference, June 4-6, 1972, held to analyze the volunteer potential of public welfare and vocational rehabilitation agencies. The report considers the psychosocial, legal, and economic aspects of modern voluntarism. Examples of innovative programs around the country utilizing volunteers as supportive personnel in state and federal agencies are detailed by conference participants.

PB-235 053/6GA PC$5.50/MF$2.25
Virginia Dept. of Vocational Rehabilitation, Richmond.
THREE DIMENSIONS OF A MODEL CITIES VOCATIONAL REHABILITATION PROGRAM: REHABILITATION GAIN: AGENCY-ENVIRONMENT INTERACTION: ORGANIZATIONAL STRUCTURE AND PROGRESSES.
Final rept.
Jun 73, 198p SRS-RD-12-55131-001
Grant SRS-12-55131

Descriptors: *Handicapped persons, *Central city, *Rehabilitation, Ethnic groups, Counseling, Cultural deprivation, Community relations, Vocational guidance, Project planning, Evaluation, Virginia.
Identifiers: *Vocational rehabilitation, Mentally retarded persons, Physically handicapped persons.

A project (1970-1973), designed to expand and qualitatively improve the type of services rendered inner-city populations, consisted of three separate, although occasionally overlapping parts. The project staff studied the client and rehabilitation process, agency environment interaction, and organizational structure and process. Rehabilitation gain was strongly correlated with the type of referring agency. Counselors relied on telephone and not face-to-face communication. In comparison to all other units in the state, the model city office demonstrated a much higher than average resistance to counseling innovation and experienced a high level of ambiguity of eligibility standards.

PB-235 054/4GA PC$4.50/MF$2.25
Comprehensive Mental Health Center of Tacoma-Pierce County, Tacoma, Wash.
RE-ENTRY INTO COMMUNITY OPPORTUNITIES, VOCATIONS, EDUCATIONS AND RECREATION (RECOVER).
Final rept.,
H. J. Wahler, and Paul Gergen. Nov 72, 123p SRS-12-55329-001
Grant SRS-12-55329

Descriptors: *Rehabilitation, *Handicapped persons, Counseling, Group therapy, Vocational guidance, Education, Washington(State).
Identifiers: *Mentally retarded persons, *Vocational rehabilitation.

The project attempted to develop a comprehensive rehabilitation program to help ex-mental patients acquire self-sufficiency as they reenter the community. The project involved the providing of vocational services through job samples, volunteer work assignments, and the establishing of cluster living.

PB-235 055/1GA PC$5.00/MF$2.25
National Urban League, Inc., New York.
PROJECT STAR 'COOKBOOK' (SERVING TO ADVANCE REHABILITATION).
Final rept.,
Earl L. Long, and Leonard Fontana. 1973, 162p
SRS-12-55061-002
Grant SRS-12-55061

Descriptors: *Children, *Mental deficiency, *Rehabilitation, Group therapy, Parent child relations, Low income areas, Minority communities, Social welfare, Service workers, Education, Florida, Indiana, Connecticut, Oregon, California.
Identifiers: *Mentally retarded persons.

The study analyzes the effect of the STAR program in five major U.S. cities. It gives an in-depth evaluation of its success in increasing the utilization of existing rehabilitation services by retarded children and their families through the use of paraprofessional and parental involvement. The report includes the data, case findings, parent discussion interviews, training procedures for paraprofessional staff, and suggestions for rehabilitation program improvement.

PB-235 140/1GA PC$4.75/MF$2.25
Northeastern Univ., Boston, Mass. New England Rehabilitation Research Inst.
DEPENDENCY AND ITS IMPLICATIONS FOR REHABILITATION.
Final rept.,
George J. Goldin, Sally L. Perry, Reuben J. Margolin, and Bernard A. Stotsky. 1972, 146p
SRS-12-55011-007
Grant SRS-12-55011
Pub. as Northeastern Univ. Studies in Rehabilitation no. 13, Revised Edition. Also pub. as International Standard Book no. 0-669-83849-3. Library of Congress Catalog Card no. 72-1968.

Descriptors: *Dependence, *Rehabilitation, Motivation, Anxiety, Handicapped persons, State government, Project planning, Reviews.
Identifiers: *Vocational rehabilitation.

The state-of-the-art monograph attempts to review and summarize the literature dealing with client dependency in the field of rehabilitation and to classify dependency to aid those doing research or practical work in this area. Areas summarized include theory, types of dependency, Uses of measurement techniques, differentiation, relevance of demographic factors, and treatment techniques. This study may be used by theoreticians as well as by people working in rehabilitation and social welfare; a complete bibliography is appended.

PB-235 141/9GA PC$4.50/MF$2.25
District of Columbia Dept. of Vocational Rehabilitation, Washington.
A COORDINATED PROGRAM OF THE DEPARTMENT OF VOCATIONAL REHABILITATION AND PUBLIC SCHOOLS FOR MENTALLY RETARDED STUDENTS IN BASIC ACADEMIC TRACK.
Final rept.,
David O. Songer. Jun 69, 113p SRS-RD-02068-001
Grant SRS-RD-02068

Descriptors: *Students, *Rehabilitation, *Mental deficiency, Schools, Adjustment(Psychology), Specialized training, District of Columbia.
Identifiers: *Mentally retarded persons, *Vocational rehabilitation.

A project (1965-1968) was initiated as a pilot program for retarded secondary school students with the purpose of preparing them for the labor market while still in school and helping them to secure suitable, gainful employment upon separation from the school. Of the 784 referrals received, 330 were accepted for services, and 140 cases were successfully rehabilitated, representing 42 percent of the cases accepted for services.

PB-235 143/5GA PC$3.75/MF$2.25
South Carolina Vocational Rehabilitation Dept., Columbia.

REHABILITATING MILITARY DEPENDENTS. A PROJECT TO DEMONSTRATE THE VALUE OF ESTABLISHING A PROGRAM OF REHABILITATION SERVICES IN A MILITARY BASE COMMUNITY.
Final rept.,
Charles S. Chandler, John P. Saxon, and Walter R. Bailey. Jun 72, 71p SRS-12-55162-001
Grant SRS-12-55162

Descriptors: *Military families, *Children, *Rehabilitation, Handicapped persons, Military bases, Comparison, Evaluation, Counseling, Parent child relations, Military mobility, South Carolina.
Identifiers: *Vocational rehabilitation.

A project (1969-1972) to determine the effectiveness of a comprehensive rehabilitation program for disabled and disadvantaged military and non-military dependents in a military base community rehabilitated a number of clients and identified variables which describe and differentiate the two groups. The program involved utilizing a referral and screening system, evaluation and rehabilitation services, collection of data for use by other rehabilitation personnel, and a research program to determine the needs of military dependents and methods to help them.

PB-235 176/5GA PC$5.25/MF$2.25
Benjamin Rose Inst., Cleveland, Ohio. Research Dept.
PROTECTIVE SERVICES FOR OLDER PEOPLE.
Final rept.,
Margaret Blenkner, Martin Bloom, Edna Wasser, and Margaret Nielsen. Oct 71, 42p SRS-CP-0072
Grant SRS-CP-0072
Pub. in Social Casework, v52 n8 Oct 71.

Descriptors: *Sociology, Community relations, Age, Protection, Socioeconomic status, Mental deficiency.
Identifiers: *Elderly persons, *Gerontology, *Social services.

Findings of the Benjamin Rose Institute's study on protective services for the aged are reported in three articles reprinted from Social Casework (October 1971).

PB-235 182/3GA PC$9.75/MF$2.25
Mississippi State Dept. of Education, Jackson. Div. of Vocational Rehabilitation.
EMERGENCY SERVICES IN A RURAL AREA.
Final rept.,
Henry J. Eaton. Jun 72, 134p SRS-12-55169-001
Grant SRS-12-55169

Descriptors: *Rehabilitation, *Vocational guidance, Rural areas, Counseling, Vocational interests.
Identifiers: *Indigent persons, Community services.

A project (1969-1972) to test the effectiveness of traditional rehabilitation services when coordinated with the use of indigenous outreach personnel. A modified tower evaluation series, a sheltered workshop, and a placement unit found the indigenous personnel helped recruit disabled and disadvantaged individuals. A workshop setting with a placement unit produced a more effective rehabilitation, but standardized testing did not accurately measure rehabilitation potential in this population.

PB-235 193/0GA PC$5.00/MF$2.25
Youth Projects, Inc., San Francisco, Calif.
VOCATIONAL REHABILITATION OF THE DRUG ABUSER, NUMBER 1. THEORY AND POLICY.
State of the Art rept. (Final).
1973, 158p* SRS-15-55894-001
Grant SRS-15-55894
See also No. 2, PB-235 194.

Descriptors: *Rehabilitation, *Drug addiction, Government policies, Health, Therapy, Employment, Meetings.
Identifiers: *Vocational rehabilitation.

The state-of-the-art monograph is the first in a series of four reports on the proper role of vocational rehabilitation in the treatment of the drug abuser; it provides an overview of several basic theories and policies on the vocational rehabilitation of the drug abuser, including types of rehabilitation used, problems involved in the life styles of drug addicts, and several policies which could be tested in future programs. The monograph is the result of the state-of-the-art editorial seminar held at Mills College, Oakland, California, March 28-30, 1973.

PB-235 194/8GA PC$5.00/MF$2.25
Youth Projects, Inc., San Francisco, Calif.
VOCATIONAL REHABILITATION OF THE DRUG ABUSER, NUMBER 2. THE PRACTICE OF THE ART.
State of the Art rept. (Final).
1973, 170p* SRS-15-55894-002
Grant SRS-15-55894
See also No. 1, PB-235 193 and No. 3, PB-235 195.

Descriptors: *Rehabilitation, *Drug addiction, Counseling, Employment, Ethnic groups, Alcoholism, Meetings.
Identifiers: *Vocational rehabilitation.

The state-of-the-art monograph is second in a series of four monographs on the proper role of vocational rehabilitation in the treatment of the drug abuser. It presents an overview of how vocational rehabilitation is presently being used by various agencies in treating various types of drug addiction cases, including community-based programs and drug treatment clinics, and gives a summary of the skills and services which must be provided for the ex-addict. The monograph is the result of the state-of-the-art editorial seminar held at Mills College, Oakland, California, March 28-30, 1973.

PB-235 195/5GA PC$5.00/MF$2.25
Youth Projects, Inc., San Francisco, Calif.
VOCATIONAL REHABILITATION OF THE DRUG ABUSER, NUMBER 3. COUNSELING AS THE ART.
State of the Art rept. (Final).
1973, 152p* SRS-15-55894-003
Grant SRS-15-55894
See also No. 2, PB-235 194, and No. 4, PB-235 196.

Descriptors: *Counseling, *Rehabilitation, *Drug addiction, Placement, Vocational guidance, Meetings.
Identifiers: *Vocational rehabilitation.

The state-of-the-art monograph provides an overview of the role of the rehabilitation counselor in treating the drug abuser and the relationship between the counselor and the client. The topics discussed include the role of the counselor, the services he should provide, the type of training the counselor should have, and methods the counselor can use to establish a good working relationship with businesses and industries.

PB-235 196/3GA PC$5.00/MF$2.25
Youth Projects, Inc., San Francisco, Calif.
VOCATIONAL REHABILITATION OF THE DRUG ABUSER, NUMBER 4. GAINFULLY EMPLOYED.
State of the Art rept. (Final).
1973, 162p* SRS-15-55894-004
Grant SRS-15-55894
See also No. 3, PB-235 195.

Descriptors: *Rehabilitation, *Drug addiction, Narcotics, Employment, Vocational guidance, Attitudes, Meetings.
Identifiers: *Vocational rehabilitation.

A state-of-the-art monograph provides an overview of the employment situation faced by the ex-addict, including the legal aspects involved in the employment of the rehabilitated addict, the training needed by the addict, types of appropriate jobs, and a discussion of the discrimination and prejudice involved in the hiring of the ex-addict. This final report also contains a proposal for future programs to use to meet the needs of the drug abuser. The monograph is the result of the state-of-the-art editorial seminar held at Mills College, Oakland, California, March 28-30, 1973.

6. BIOLOGICAL AND MEDICAL SCIENCES

6A. Biochemistry

BNL-18867 PC$4.00/MF$2.25
Brookhaven National Lab., Upton, N.Y.
NEUTRON STRUCTURAL ANALYSIS OF PROTEINS, MEMBRANES, AND PROTEIN COMPLEXES.
B. P. Schoenborn. 1974, 19p CONF-740419-2

Descriptors: (*Cell membranes, *Structural chemical analysis), (*Proteins, Structural chemical analysis), Chemical composition, Measuring methods, Nerves, Neutron beams, Radiation scattering analysis, Rna.

For abstract, see NSA 30 04, number 12108.

CEA-R-4560 PC$4.00/MF$2.25
CEA Centre d'Etudes Nucleaires de Grenoble, 38 (France).
ISOLATION AND CRYSTALLIZATION OF NUCLEOSIDE DIPHOSPHOKINASE FROM BEEF HEART.
A. M. Duplaa. May 74, 14p
In French. U.S. Sales Only.

Descriptors: (*Phosphotransferases, *Purification), Cattle, Crystallization, Electrophoresis, Heart, Metabolism, Nucleosides.

For abstract, see NSA 30 05, number 14722.

COM-74-11395/2GA Reprint
Rhode Island Univ., Kingston. Dept. of Pharmacognosy.
CHARACTERIZATION OF AN ACID HYDROLYSIS PRODUCT OF STARFISH TOXINS AS A 5 ALPHA-PREGNANE DERIVATIVE,
Yuzuru Shimizu. 22 Feb 72, 3p NOAA-74071719
Pub. in Jnl. of the American Chemical Society, v94 p4051 1972.

Descriptors: *Starfishes, *Toxins and antitoxins, Polycyclic compounds, Molecular structure, Hydrolysis, Glycosides, Purification.
Identifiers: Pregnenolones, *Pregnanes.

Starfish contain toxins which are cytotoxic, hemolytic, antiviral, and repellent to other marine animals. The author has recently reported the purification of the toxins from three species of starfish. One component appears to be a pregnane derivative. Pregnane derivatives have never been reported in such lower animals as Echinoderms, and even in the whole invertebrate very few have been reported.

CONF-731216-2 PC$4.00/MF$2.25
Oak Ridge National Lab., Tenn.
STUDIES ON DEGRADATION OF TYROSINE AMINOTRANSFERASE IN LIVER AND HEPATOMA CELLS.
F. T. Kenney, R. W. Johnson, and K. L. Lee. 1973, 13p
Contract W-7405-eng-26

Descriptors: (*Aminotransferases, *Biochemical reaction kinetics), Cell cultures, Decomposition, Hepatomas, Liver, Tumor cells, Tyrosine.

For abstract, see NSA 30 04, number 12110.

COO-2012-24 PC$4.00/MF$2.25
Oakland Univ., Rochester, Mich. Inst. of Biological Sciences.
IONIC TRANSPORT IN THE OCULAR LENS. PROGRESS REPORT.
1974, 20p
Contract AT(11-1)-2012

Descriptors: (*Crystalline lens, *Biochemical reaction kinetics), (*Alkali metal compounds, Biochemical reaction kinetics), Cations, Cesium compounds, Diffusion, Eyes, Lithium, Potassium compounds, Rabbits, Rubidium compounds, Sodium, Thallium compounds.

For abstract, see NSA 30 04, number 12119.

COO-2382-1 PC$4.25/MF$2.25
Johns Hopkins Univ., Baltimore, Md. Dept. of Radiology.
MECHANISMS OF ABERRATION PRODUCTION IN EUKARYOTE CHROMOSOMES. ANNUAL PROGRESS REPORT, JULY 1, 1973--JUNE 30, 1974.
M. A. Bender. 1974, 23p
Contract AT(11-1)-2382

Descriptors: (*Chromosomal aberrations, *Biochemical reaction kinetics), Animal cells, Cell cycle, Cell killing, Computers, Dna, Measuring methods.

For abstract, see NSA 30 04, number 12123.

COO-2423-1 PC$4.00/MF$2.25
Harvard Univ., Cambridge, Mass. Biological Labs.
STUDIES OF MEMBRANE STRUCTURE BY FREEZE-ETCHING. PROGRESS REPORT.
D. Branton. 1 Jun 74, 6p
Contract AT(11-1)-2423

Descriptors: (*Cell membranes, *Morphological changes), Biochemical reaction kinetics, Lipids, Lyophilization, Permeability, Proteins.

For abstract, see NSA 30 04, number 12125.

COO-3162-17 PC$4.00/MF$2.25
Cornell Univ., Ithaca, N.Y.
STUDIES IN PHOTOSYNTHETIC ENERGY CONVERSION. ANNUAL PROGRESS REPORT, SEPTEMBER 1, 1973--AUGUST 31, 1974.
R. K. Clayton. 1974, 8p
Contract AT(11-1)-3162

Descriptors: (*Photosynthesis, *Research programs), Energy, Photochemistry, Rhodopseudomonas, Ubiquinone.

For abstract, see NSA 30 04, number 12126.

JPRS-62537 PC$3.00/MF$2.25
Joint Publications Research Service, Arlington, Va.
A STUDY OF THE EFFECT OF RADIO-FREQUENCY AND MICROWAVE ELECTROMAGNETIC FIELDS ON THE ENZYME-SUBSTRATE REACTION IN AQUEOUS SOLUTIONS AND ORGANIC SOLVENTS,
E. Kiirend, R. Aguraiyuya, and E. Lippmaa. 23 Jul 74, 9p
Trans. of Akademiya Nauk Estonskoi SSR, Tallinn. Izvestiya. Seriya Fizika, Matematika, v23 n2 p177-181 1974.

Descriptors: *Enzymes, *Chemical reactions, *Radio frequencies, High frequency, Microwaves, Electromagnetic fields, USSR, Translations.

The report contains results of an investigation of the effect of a high frequency electromagnetic field on the enzyme-substrate reaction.

ORO-3018-74 PC$5.50/MF$2.25
Louisiana State Univ., Baton Rouge Coates Chemical Labs.
EMISSIVE CHARACTERISTICS OF AMIDIC MOLECULES.
D. B. Larson, J. F. Arnett, C. J. Seliskar, and S. P. McGlynn. 49p
Contract AT(40-1)-3018

Descriptors: (*Biological materials, *Photoluminescence), (*Amides, *Photochemistry), Molecular biology.

For abstract, see NSA 30 04, number 12139.

SRO-635-3 PC$4.00/MF$2.25
Georgia Univ., Athens Dept. of Biochemistry.
MECHANISM STUDIES ON BIOLUMINESCENT REACTIONS WITH EMPHASIS ON ENERGY TRANSFER PROBLEMS. PROGRESS REPORT, AUGUST 15, 1973--AUGUST 14, 1974.
M. J. Cormier. 5p
Contract AT(38-1)-635

Descriptors: (*Luminescence, *Biochemical reaction kinetics), Aquatic ecosystems, Biosynthesis, Invertebrates, Luciferase, Luciferin, Seas.

For abstract, see NSA 30 04, number 12143.

SRO-644-9 PC$4.00/MF$2.25
Georgia Univ., Athens Dept. of Zoology.
STUDY OF THE NON-HISTONE PROTEINS OF THE NUCLEOLOCHROMATIN COMPLEX. PROGRESS REPORT: MARCH 1973--MARCH 1974.
G. L. Patel. 9p
Contract AT(38-1)-644

Descriptors: Affinity, Biochemical reaction kinetics, Cell constituents, Cell nuclei, Chemical properties, Chromatin, Dna, Nucleic acids, Proteins.

For abstract, see NSA 30 04, number 12144.

UCB-34-P-186-X-4 PC$4.00/MF$2.25
California Univ., Berkeley.
RECOVERY AND ANALYSIS OF MUTANTS CONTROLLING DEVELOPMENT OF DROSOPHILA MELANOGASTER. PROGRESS REPORT.
1974, 17p
Contract AT(14-3)-34

Descriptors: (*Drosophila, *Mutants), (*Rna, *Biosynthesis), (*Polymerases, *Biochemical reaction kinetics), (*Dna, Biosynthesis), Population dynamics, Proteins.

For abstract, see NSA 30 04, number 12145.

6B. Bioengineering

AD-783 805/5GA PC$4.75/MF$2.25
Aerospace Medical Research Lab Wright-Patterson AFB Ohio
ACOUSTIC SCATTERING FROM A SPHERE WITH NONUNIFORM SURFACE IMPEDANCE,
David L. Brungart. May 74, 134p Rept no. AMRL-TR-74-49

Descriptors: *Acoustic scattering, *Biomechanics, Mathematical models, Diffraction, Bioengineering, Aerospace medicine, Stress(Physiology), Head(Anatomy), Acoustic impedance.

A general mathematical method is presented for computing effective overpressure distribution in the near and far field regions around a sphere with uniform or nonuniform surface acoustic impedance distribution in the presence of a plane acoustic wave, first for impedance distributions which are symmetric about the axis of approach of the incoming plane wave, then for nonsymmetric distributions with proofs of convergence of the solution method being presented for both symmetric and nonsymmetric cases. Numerical examples are computed and presented graphically for rigid spheres, infinitely soft spheres, spheres with uniform finite surface impedance, and spheres with several types of nonuniform impedance distribution. It is concluded that any model designed to reproduce diffraction patterns of the human head should have a partial covering of material with finite surface impedance to account for the effects of the hair on the effective overpressure distribution. (Modified author abstract)

BDX-613-994(Rev.) PC$5.00/MF$2.25
Bendix Corp., Kansas City, Mo.
STATIC CHARGE AND CURRENT LEAKAGE EFFECTS RELATING TO MANUFACTURE OF JFET ASSEMBLIES. FINAL REPORT.
L. S. Carter. May 74, 38p
Contract AT(29-1)-613

Descriptors: (*Field effect transistors, *Operation), Biological models, Cleaning, Electric conductivity, Electricity, Failures, Impedance, Leakage current, Man, Performance, Personnel, Printed circuits.

For abstract, see NSA 30 04, number 12105.

COO-2155-10 PC$4.50/MF$2.25
Utah Univ., Salt Lake City Inst. for Biomedical Engineering.
BIOMEDICAL ENGINEERING SUPPORT. FIRST QUARTERLY REPORT FOR 1973--1974.
W. J. Kolff, L. M. Smith, and G. M. Sandquist. 27p
Contract AT(11-1)-2155

Descriptors: (*Mechanical heart, *Blood circulation), Cattle, Heart, Hemolysis, Heparin, Motors, Surgery.

For abstract, see NSA 30 05, number 14723.

COO-2155-11 PC$5.00/MF$2.25
Utah Univ., Salt Lake City Inst. for Biomedical Engineering.
BIOMEDICAL ENGINEERING SUPPORT. SECOND QUARTERLY REPORT, NOVEMBER 16, 1973--FEBRUARY 15, 1974.
W. J. Kolff, L. M. Smith, and G. M. Sandquist. 40p
Contract AT(11-1)-2155

Descriptors: (*Mechanical heart, *Blood circulation), Cattle, Motors, Surgery.

For abstract, see NSA 30 05, number 14724.

ORO-2401-82 PC$4.00/MF$2.25
Vanderbilt Univ., Nashville, Tenn.; Veterans Administration Hospital, Nashville, Tenn.
EFFECT OF ELECTRICAL STIMULATION ON THE BIOPHYSICAL PROPERTIES OF HEALING FRACTURES.
J. F. Connolly, J. Ortiz, R. R. Price, and R. J. Bayuzick. 1972, 17p CONF-7309104-1
Contract AT(40-1)-2401

Descriptors: (*Bone fractures, *Healing), (*Electric charges, *Biological effects), Dogs, Response modifying factors.

For abstract, see NSA 30 04, number 12138.

PB-234 749/0GA PC$3.75/MF$2.25
National Academy of Engineering, Washington, D.C. Committee on the Interplay of Engineering with Biology and Medicine.
FEDERAL AGENCY DEVELOPMENT IN MEDICAL ENGINEERING.
Final rept.,
Murray Eden, and Saul Padwo. May 73, 58p*
NAE/CIEBM-74/9
Contract PH-43-64-44

Descriptors: *Bioengineering, *Medical services, *National government, Clinical medicine, Research management, Patents, Medical equipment.
Identifiers: *Health care delivery systems.

The report attempts to identify the critical factors which influence the rate of progress from the time that the need for a clinical device is recognized to the entrance of a manufactured product into the commercial market; suggest ways in which adequate coordination among government, the academic community, and the health care system can be achieved. The report is based on the findings of a workshop held to examine ways in which federal agencies could best stimulate and help guide technical development. The pivotal importance of the coordination function in carrying through such complex development programs was a major consensus. Specific findings are that a proper intermediary can be an aid in accelerating the rate of technological progress toward higher productivity, more uniform distribution, and lower cost in the delivery of health care with no loss of quality.

PB-235 139/3GA PC$34.25/MF$2.25
Case Western Reserve Univ., Cleveland, Ohio. Cybernetic Systems Group.
BIOMEDICAL RESEARCH PROGRAM ON CYBERNETIC SYSTEMS FOR THE DISABLED.
Final rept.,
James B. Reswick. 1970, 621p EDC-4-70-29 SRS-RD-01814-001
Grant SRS-RD-01814

Descriptors: *Prosthetic devices, *Cybernetics, *Man machine systems, Human factors engineering, Bioengineering, Paralysis, Rehabilitation, Computers, Electrical shock, Stimulus(Psychophysiology).
Identifiers: *Orthotics.

A five year bio-medical research program on cybernetic systems for the disabled is reported. The aim of this basic research was the development of cybernetic systems to enable a paralyzed person to regain useful control of a paralyzed limb. Extensive research, development, and implementation efforts in the two areas of man-machine computer orthotic/prosthetic systems and functional electrical stimulation are reported.

6C. Biology

BNL-18796 PC$4.50/MF$2.25
Brookhaven National Lab., Upton, N.Y.
EFFECTS OF GENE DOSAGE ON PEROXIDASE ISOZYMES IN DATURA STRAMONIUM TRISOMICS.
H. H. Smith, and M. E. Conklin. 1974, 26p CONF-740444-1

Descriptors: (*Plants, *Genetic variability), Biochemical reaction kinetics, Mutants, Peroxidases.

For abstract, see NSA 30 04, number 12106.

BNL-18801 PC$4.25/MF$2.25
Brookhaven National Lab., Upton, N.Y.; Mount Sinai School of Medicine, New York.
HAYFLICK'S HYPOTHESIS: AN APPROACH TO IN-VIVO TESTING.
U. Reincke, H. Burlington, E. P. Cronkite, and J. Laissue. 25p CONF-740436-1

Descriptors: (*Stem cells, *Reproduction), Cell proliferation, In vivo, Survival time, Testing.

For abstract, see NSA 30 04, number 12107.

COM-74-11344/0GA PC$3.25/MF$2.25
Rhode Island Univ., Kingston. Dept. of Resource Economics.
THE BENEFITS OF FISHERIES REGULATION: A CASE STUDY OF THE NEW ENGLAND YELLOWTAIL FLOUNDER FISHERY.
Technical rept.,
John M. Gates, and Virgil J. Norton. 1974, 40p
Marine-TR-21 NOAA-74070502
Contract DI-14-17-0001-1117
Also pub. as Rhode Island Agricultural Experiment Station, Contrib-1521.

Descriptors: *Commercial fisheries, *Fish economics, *Massachusetts, Management, Fishing grounds, Economic models, Mortality, Estimates, Abundance, New England.
Identifiers: Sea Grant program, Yellowtail flounders, Fish landings.

To provide insight into the potential economic gains from an effective management program, the authors evaluated the impact of controlling the levels of domestic and foreign effort and mesh size in the yellowtail flounder fishery. This fishery was selected because of its long-time importance to New England and because there are indications that the existing and generally increasing effort on this species has caused biological as well as economic overfishing. This study used a steady state bio-economic analysis. It also developed explicitly the biological yield functions and the crowding externality which exists for a fixed stock of fish. It improves upon some previous approaches by integrating many of the biological and economic factors that affect the fishing industry.

COM-74-11350/7GA PC$3.00/MF$2.25
Oregon State Univ., Corvallis. Sea Grant Marine Advisory Program.
CATHCHING, CLEANING, AND COOKING BAY CRABS,
Jay B. Long. May 74, 10p OSU-SG-30 NOAA-74070301

Descriptors: *Crabs, *Fishing, *Food processing, Cleaning, Shellfish, Crustacea, Fishing equipment, Cookery, Oregon.
Identifiers: Sea Grant program.

The publication provides useful information on catching, cleaning, and cooking bay crabs. Although each year a greater number of sportsmen are clamming and angling in Oregon's bays, it is surprising how few have ever tried crab fishing. A little know how and a minimum of extra gear almost guarantee catch results. Seasons are open year 'round, and about the only time bay crabs are not available is when extreme freshets lower water salinity, forcing crabs oceanward to saltier water. Equipment needed for bay crabbing includes crab nets (sometimes called 'rings'), bait, a measuring gauge (to check the crabs for legal size), and a boat and motor.

COM-74-11366/3GA PC$4.75/MF$2.25
Washington State Dept. of Fisheries, Olympia. Management and Research Div.
PINK AND CHUM SALMON PREDICTION STUDIES.
Completion rept. 1 Jan 72-31 Dec 73,
Charles F. Morrill. May 74, 35p NOAA-74062107

Descriptors: *Salmon, *Puget Sound, *Hood Canal, Predictions, Abundance, Sampling, Fishing grounds, Tables(Data), Washington(State).
Identifiers: Oncorhynchus reta, Oncorhynchus gorbusca.

The 1973 predicted run sizes of 1,140,000 and 960,000 pink salmon based on the pre-emergent and marine indices of fry abundance underestimated the actual return by 32,000 and 180,000. Because each brood of chum salmon returns to spawn in three age classes, relative run size predictions have proven unsatisfactory for management objectives. The report evaluates the relationships between the indices of chum fry abundance and the subsequent adult return. A significant relationship exists between the marine survey indices of chum fry abundance and the subsequent returns of adult chum salmon from each brood year 1965 to 1969 for all Puget Sound and for Hood Canal. (Modified author abstract)

COM-74-11404/2GA Reprint
California Univ., San Diego, La Jolla. Inst. of Marine Resources.
CYCLOEUDESMOL, AN ANTIBIOTIC CYCLOPROPANE CONTAINING SESQUITERPENE FROM THE MARINE ALGA, 'CHONDRIA OPPOSITICLADA' DAWSON,
William Fenical, and James J. Sims. 17 Dec 73, 6p
NOAA-74072904
Grant NOAA-2-35208
Prepared in cooperation with California Univ. Riverside. Dept. of Plant Pathology.
Pub. in Tetrahedron Letters, n13 p1137-1140 1974.

Descriptors: *Algae, *Antibiotics, Cyclopropane, Aquatic animals, Terpene compounds, Alcohols, Staphyloccus, Candida.
Identifiers: Sea Grant program, Chondria oppositiclada, Cycloeudesmol, Staphylococcus aureus, Candida albicans.

Chondria oppositiclada Dawson, a marine algae produces cyclopropane containing sesquiterpene alcohol, cycloeudesmol. Cycloeudesmol is strongly antibiotic toward Staphylococcus aureus and Candida albicans.

COM-74-11423/2GA PC$6.25/MF$2.25
Wisconsin Dept. of Natural Resources, Madison.
ASSESSMENT OF LAKE TROUT AND ASSOCIATED SPECIES IN LAKES MICHIGAN AND SUPERIOR, 1969-72.
Completion rept. Jul 69-Jun 72,
Russell Daley, James Moore, George King, Brian Belonger, and Bruce L. Swanson. May 74, 63p
NOAA-74072244

Descriptors: *Trout, *Lake Superior, *Lake Michigan, Mortality, Lampreys, Abundance, Animal migrations.

Progress in the assessment of lake trout is reported on an individual lake basis due to differences in sampling and reporting procedures agreed upon by the states and provinces bordering each lake. Reporting on this split basis is appropriate since the two lake trout stocks have not recovered at the same rate, nor were they originally decimated to the same extent. Because the lake trout population of Lake Michigan remains entirely dependent upon a stocking program, major emphasis in relation to these waters has been placed on monitoring of sea lamprey activity and on determining changes in relative abundance of the various year classes. Greater emphasis has been placed on assessment work in Lake Superior because of significant improvements in the status of hatchery and native lake trout.

CONF-740425-3 PC$4.75/MF$2.25
Oak Ridge National Lab., Tenn.; Tennessee Univ., Oak Ridge Graduate School of Biomedical Sciences.
INTERGENIC RECOMBINATION, DNA REPLICATION AND SYNAPTONEMAL COMPLEX FORMATION IN THE DROSOPHILA OOCYTE.
R. F. Grell, and J. W. Day. 33p

Descriptors: (*Oocytes, *Dna replication), Cell cycle, Cell differentiation, Drosophila, Gene recombination, Meiosis, Ontogenesis.

For abstract, see NSA 30 04, number 12111.

COO-2039-21 PC$7.00/MF$2.25
Michigan State Univ., East Lansing.
ELECTRONIC EXCITATION OF COMPOSITE SYSTEMS. TECHNICAL PROGRESS REPORT.
M. A. El-Bayoumi. 15 May 74, 7p
Contract AT(11-1)-2039

Descriptors: (*Organic compounds, *Excited states), (*Biological materials, Excited states), Electrons, Excitation, Geometry, Mechanics, Molecules, Phototubes, Relaxation.

For abstract, see NSA 30 04, number 12120.

COO-3278-21 PC$4.75/MF$2.25
Johns Hopkins Univ., Baltimore, Md.
GROWTH AND DISSIPATION OF PHYTOPLANKTON IN CHESAPEAKE BAY. III. INORGANIC CARBON REQUIREMENTS OF NATURAL POPULATIONS AND LABORATORY CULTURES OF PHYTOPLANKTON.
M. E. Loftus, A. Place, and H. H. Seliger. 1973, 34p
Contract AT(11)-3278

Descriptors: (*Algae, *Photosynthesis), Carbon 14, Plankton, Plant growth, Tracer techniques, Uptake.

For abstract, see NSA 30 05, number 14727.

COO-3278-24 PC$4.75/MF$2.25
Johns Hopkins Univ., Baltimore, Md.
MEASUREMENTS OF ABSOLUTE SCALAR IRRADIANCE SPECTRA IN RHODE RIVER.
W. E. Esaias, W. H. Biggley, and H. H. Seliger. 1972, 31p

Descriptors: Algae, Chesapeake Bay, Estuaries, Measuring methods, Plankton, Rivers, Spectra, Sun.

For abstract, see NSA 30 05, number 14728.

COO-3278-27 PC$4.75/MF$2.25
Johns Hopkins Univ., Baltimore, Md.
PHYTOPLANKTON GROWTH, DISSIPATION, AND SUCCESSION IN ESTUARINE ENVIRONMENTS. PROGRESS REPORT, 3 YEAR PERIOD THROUGH APRIL 1974.
H. H. Seliger. 34p
Contract AT(11-1)-3278

Descriptors: (*Chesapeake bay, Plankton), (*Plankton, *Ecology), Aquatic ecosystems, Estuaries, Food chains, Nutrients, Photosynthesis, Plant growth, Sampling, Seasonal variations.

For abstract, see NSA 30 04, number 12129.

COO-3279-7 PC$15.75/MF$2.25
Johns Hopkins Univ., Baltimore, Md. Chesapeake Bay Inst.
ECOLOGY OF THE PLANKTON OF THE CHESAPEAKE BAY ESTUARY. PROGRESS REPORT, JULY 1, 1973--JULY 31, 1974.
W. R. Taylor. 1974, 253p
Contract AT(11-1)-3279

Descriptors: (*Chesapeake bay, Plankton), (*Plankton, *Ecology), Animal growth, Aquatic ecosystems, Estuaries, Food chains, Protozoa, Seasonal variations.

For abstract, see NSA 30 04, number 12130.

COO-3390-14 PC$4.50/MF$2.25
New York Aquarium, Brooklyn Osborn Labs. of Marine Sciences.
ROLE OF PLANKTONIC PROTOZOA IN THE MARINE FOOD CHAIN. SEASONAL CHANGES, RELATIVE ABUNDANCE, AND CELL SIZE DISTRIBUTION OF TINTINNIDA. PROGRESS REPORT, MAY 1, 1973--APRIL 30, 1974.
K. Gold. 1974, 27p
Contract AT(11-1)-3390

Descriptors: (*Plankton, *Ecology), Animal growth, Aquatic ecosystems, Coastal waters, Estuaries, Food chains, Protozoa, Seasonal variations.

For abstract, see NSA 30 04, number 12132.

JPRS-62502 PC$3.00/MF$2.25
Joint Publications Research Service, Arlington, Va.
SWIMMING HYDRODYNAMICS OF FISH,
G. V. Logvinovich. 18 Jul 74, 9p
Trans. of Akademiya Nauk SSSR. Sibirskoe Otdoelenie. Izvestiya. Seriya Tekhnicheskikh Nauk, n8 p3-8 1973.

Descriptors: *Hydrodynamics, *Fishes, Swimming, Mathematical models, Experimental data, USSR, Translations.

The report contains formulas and a comparison of theory with experimental data for the case of eel-like movement, the role is examined of various design factors in the formation of the thrust and suction forces.

JPRS-62526 PC$3.00/MF$2.25
Joint Publications Research Service, Arlington, Va.
HYDRODYNAMIC RESISTANCE OF SEMIAQUATIC MAMMALS,
B. V. Kurbatov, and Yu. E. Mordvinov. 22 Jul 74, 11p
Trans. of Zoologicheskii Zhurnal (USSR) v53 n1 p104-110 1974.

Descriptors: *Hydrodynamics, *Aquatic animals, Evolution(Development), Morphology, Anatomy, Mammals, Ecology, USSR, Translations.
Identifiers: Seals(Zoology).

The report contains a study of hydrodynamic characteristics of the body structure of semiaquatic mammals of different systemic and ecological groups and an analysis of the degree of their adaptability to life in an aquatic medium.

JPRS-62552 PC$3.00/MF$2.25
Joint Publications Research Service, Arlington, Va.
CAPACITIES OF THE ELECTRORECEPTOR SYSTEM OF BLACK SEA RAYS TO PERCEIVE A MAGNETIC FIELD,
G. R. Broun, Yu. N. Andrianov, and O. B. Ilyinskii. 24 Jul 74, 7p
Trans. of Akademiya Nauk SSSR. Doklady, v216 n1 p232-234 1974.

Descriptors: *Magnetic fields, *Sense organs, *Aquatic animals, USSR, Translation.
Identifiers: Neurophysiology, Black sea ray.

The report contains a direct neurophysiological study of magnetic orientation in Black Sea rays which possess electroreceptor apparatus.

ORO-4254-24 PC$4.00/MF$2.25
Oklahoma State Univ., Stillwater.
DIEL PERIODICITY IN UPTAKE OF NITRATE AND NITRITE BY RESERVOIR PLANKTON.
D. Toetz. 1973, 12p
Contract AT(40-1)-4254

Descriptors: (*Nitrates, *Uptake), (*Nitrites, Uptake), (*Plankton, *Metabolism), Daily variations, Nitrogen 15, Solar radiation, Tracer techniques, Water reservoirs.

For abstract, see NSA 30 05, number 14730.

PB-234 339/0GA PC$3.25/MF$2.25
Oregon State Univ., Corvallis. Dept. of Fisheries and Wildlife.
TEMPERATURE REQUIREMENTS OF SALMONIDS IN RELATION TO THEIR FEEDING, BIOENERGETICS, GROWTH, AND BEHAVIOR.
Summary progress rept. 1 Jul 71-30 Jun 74 on Phase 2,
Gerald E. Davis. 30 Jun 74, 26p W74-10394, OWRR-B-072-OREG(4)
See also PB-207 137.

Descriptors: *Fishes, Temperature perception, Growth, Reproduction(Biology), Streams, Water quality, Feeding(Supplying), Salmon, Trout, Behavior, Models, Ecology, Evaluation.
Identifiers: *Thermal pollution, Chinook salmon, Rainbow trout, Salmo gairdneri, *Water pollution effects(Animals), Oncorhynchus tshawytscha.

Model stream ecosystems were used to evaluate the effect of a moderate increment of temperature change (4C) on the survival, growth and production of juvenile chinook salmon, Oncorhynchus tshawytscha, and on the abundance of the stream invertebrates. Growth rates were not greatly different between the heated and control stream but, because of higher survival rates, values of annual production were markedly greater in the control than in the heated stream. Laboratory studies defined relationships between rates of growth and food consumption for juvenile steelhead trout, Salmo gairdneri, kept at ambient and at elevated (3 and 6C) fluctuating temperatures during different seasons. Results suggested that if food availability remained unchanged, increase of temperature above normal seasonal temperatures would decrease growth rates of trout in their natural environment.

PB-234 613/8GA PC-GPO/MF$2.25-NTIS
Oklahoma Univ., Norman. Dept. of Zoology.
CULTURING AND ECOLOGY OF DIAPTOMUS CLAVIPES AND CYCLOPS VERNALIS.
Ecological research series,
Andrew Robertson, Carl W. Gehrs, Bryan D. Hardin, and Gary W. Hunt. Apr 74, 242p EPA-660/3-74-006
Paper copy also available from GPO PC$2.55.

Descriptors: *Crustacea, *Cultures(Biology), Environments, Laboratory animals, Animal ecology, Populations, Recommendations, Feeding habits, Temperature, Light(Visible radiation), Life cycles, Reproduction(Biology), Experimental data, Tables(Data).
Identifiers: Diaptomus clavipes, Cyclops vernalis, *Copepoda.

The report presents the results of studies undertaken to develop a method of maintaining health, self-propagating, laboratory cultures of the freshwater calanoid copepod, Diaptomus clavipes. Recommendations are given as to the conditions of container size, type of culture medium, light conditions, temperature conditions, food type and quantity, frequency of replacement medium, and amount of disturbance suggested for culturing. The results of a study dealing with effects of temperature on certain reproductive attributes of this species are presented. The report includes the results from a study on the dynamics of a field population of D. clavipes. The durations of the various life history stages were estimated both from laboratory and field data. Life tables were constructed for the spring generation of this population as well as all generations in a reproductive year combined. The stages of greatest relative mortality were identified. The report also presents recommendations for culturing the cyclopoid copepod, Cyclops vernalis, and the results of studies concerning effects of temperature on certain reproductive attributes of this species.

SGAE-2250 PC$4.00/MF$2.25
Oesterreichische Studiengesellschaft fuer Atomenergie G.m.b.H., Seibersdorf. Inst. fuer Biologie.
NEW ASPECT IN NUCLEOTIDE FORMATION FOR DNA-REPAIR PROCESSES.
G. Partsch, R. Eberl, T. Coetzer, and H. Altmann. Feb 74, 8p CONF-731215-1
U.S. Sales Only.

Descriptors: (*Dna, *Biological repair), Biosynthesis, Dna replication, Nucleotides, Strand breaks.

For abstract, see NSA 30 04, number 12142.

TID-26579 PC$4.00/MF$2.25
Texas Univ., Houston Graduate School of Biomedical Sciences.
POLAR ASPECTS OF SPONTANEOUS RECOMBINATION IN F-MERODIPLOID DERIVATIVES OF ESCHERICHIA COLI K12.
May 74, 13p

Descriptors: (*Escherichia coli, *Gene recombination), Chromosomes, Dna, Genetics.

For abstract, see NSA 30 05, number 14731.

TT-72-56055 PC$3.00/MF$2.25
Department of Agriculture, Washington, D.C.
SOME LITTLE KNOWN DISEASES OF ADULT BEES (PARALYSIS, SEPTICEMIA, SO-CALLED MAY DISEASE AND BLACK DISEASE)(O NEKIM NEDOVOLJNO PROUCENIM BOLESTIMA ODRASLIH PCELA (PARALIZA, SEPTIKEMIJE TZV. SVIBANJSKA I CRNA BOLEST)),
N. Fijan. 1974, 13p
Trans. of Veterinarski Arhiv (Yugoslavia) v36 n11/12 p301-309 1966, by Vojislav Pavasovic. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Bees, Septicemia, Arthropoda, Veterinary medicine, Infectious diseases, Yugoslavia, Translations, Reviews, Paralysis, Histology.

The paper surveys the current state of knowledge of bee paralysis and septicemia, and the so-called black disease and May disease, with special reference to some problems which have not yet been quite solved.

TT-73-54021 PC$3.00
Department of Agriculture, Washington, D.C.
CHANGES IN THE MORPHOLOGY OF MITES (ZMIANY W BUDOWIE MORFOLOGICZNEJ ROZTOCZY),
Bohden Kielczewski, and Jerzy Wisniewski. 1974, 6p
Trans. of Przeglad Zoologiczny (Poland) v10 n1 p49-50 1966, by Anatol Dangel. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Mites, Arachnida, Arthropoda, Pathology, Morphology, Poland, Translations.
Identifiers: Mesostigmata, Ixodides.

The report presents evidence that anomalies in the external structure of arthropods do not belong to rarities, a fact which has been indicated in numerous studies on this subject especially as concern beetles. In all probability such changes have not been given attention to in mites due to small dimensions of their bodies.

TT-73-54030 PC$3.00
Department of Agriculture, Washington, D.C.
AN ANALYSIS OF SPECIES COMPOSITION OF BEETLES OCCURRING IN ANTHILLS OF FORMICA RUFA L. AND FORMICA POLYCTENA FORST. (HYMENOPTERA, FORMICIDAE) (ANALIZA SKLADU GATUNKOWEGO CHRZQSZCZY WYSTEPUJQCYCH W MROWISKACH FORMICA RUFA L. I FORMICA POLYCTENA FORST (HYMENOPTERA, FORMICIDAE)),
Jerzy Wisniewski. 1974, 13p
Trans. of Polskie Pismo Entomologiczne, v33 n1 p183-193 1963, by Anatol Dangel. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Beetles, *Formicidae, Collecting methods, Ecology, Symbiosis, Taxonomy, Arthropoda, Poland, Translations, Life cycles.
Identifiers: Formica rufa, Formica polyctena.

From the results of these investigations the following conclusions can be drawn: Species of the Staphylinidae family were most numerously represented with both species of ants under investigation. Species which can be classified as indifferently tolerated guests (synoikia) were numerous in the investigated anthills. These were followed by guests hostilely pursued (synechtry).

TT-73-54043 PC$3.00
Department of Agriculture, Washington, D.C.
GROWTHS OBSERVED ON WORKER ANTS FORMICA POLYCTENA FORST. (HYM., FORICIDAE) (NAROSLA ZAOBSERWOWANE NA ROBOTNICACH FORMICA POLYCTENA FORST. (HYM., FORMICIDAE)),
Jerzy Wisniewski. 1974, 7p
Trans. of Polskie Pismo Entomologiczne, v37 n2 p379-383 1967, by Anatol Dangel. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Formicidae, *Growth abnormalities, Poland, Translations, Entomology, Anatomy, Morphology, Microscopy, Stains.
Identifiers: Formica polyctena.

Ants having characteristic growths on the surface of their body are studied. In order to determine the origin and character of the deformation, a precise study on their structure was carried out under microscope with the use of certain stains.

TT-73-54044 PC$3.00
Department of Agriculture, Washington, D.C.
THE PROBLEM OF PREDATION OF BARK BEETLE EGGS BY MITES (ZAGADNIENIE DRAPIEZNICTWA ROZTOCZY (ACARINA) NA JAJACH KORNIKOW (SCOLYTIDAE, COLEOPTERA)),
B. Kielczewski, and S. Balazy. 1974, 6p
Trans. of Ekologia Polska. Seria B, v12 n2 p161-163 1966, by Helena Massey. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Mites, *Beetles, Taxonomy, Arthropoda, Insects, Life cycle, Entomology, Translations, Poland.
Identifiers: Predator prey relationships.

The report discusses the occurence of ovivorous species of arthropods in feeding grounds of some bark beetles which represents an interesting case of predator-prey relations. Because of the ovivoracity of the species, mites taken as a taxon should be assigned to the set of factors which hinder the reproduction of certain bark beetles in Polish forest stands.

TT-73-54059 PC$3.00
Department of Agriculture, Washington, D.C.
NECTAR SECRETION AND HONEY PRODUCTIVITY OF CAULIFLOWER X PASTURE CABBAGE HYBRID (NEKTAROWANIE I WYDAJNOSC MIODOWA MIESZANCA KALAFIORA Z KAPUSTQ PASTEWNQ),
Stanislaw Wrona, and Wlodzimierz Janczar. 1974, 6p
Trans. of Pszczelnicze Zeszyty Naukowe (Poland) v13 nl-3 p143-146 1969, by Zdishaw Markiewicz. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Cabbage, *Plant physiology, Pipettes, Vegetables, Plants(Botany), Poland, Translations, Flowers.
Identifiers: Brassica.

The authors have described the characteristic features of the cauliflower X pasture cabbage hybrid as an agricultural plant and have also determined its nectar secretion and honey productivity the results of which are presented in this paper.

TT-73-54082 PC$3.00
Department of Agriculture, Washington, D.C.
THE ROLE OF INSECTS OF THE APOIDEA FAMILY ON ALFALFA SEED PLANTATIONS (ROLA OWADOW PSZCZOLOWATYCH NA PLANTACJACH NASIENNYCH LUCCERNY),
Miroslawa Dylewska. 1974, 9p
Trans. of Wszechswiat (Poland) v52 n10 1970, by Zdzislaw Markiewicz. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Pollen, *Grasses, *Bees, Farm crops, Plants(Botany), Poland, Translation, Arthropoda, Plant anatomy, Seeds.
Identifiers: Apoidea.

The report discusses the number of insects pollinating alfalfa in the Lublin Voivodship as well as the effectiveness of the work of insects of the Apoidea family. The object of these studies was to enable forecasting of the number of alfalfa seeds and to correct work of farmers, as the efforts put into fertilization of soil, obtaining of good varieties of alfalfa, preventive measures, etc., will be of no avail if pollination is not sufficient.

UCLA-34-P-61-X-15 PC$4.00/MF$2.25
California Univ., Los Angeles.
METABOLIC CONTROL OF TRANSPORT IN PLANT TISSUES. COMPREHENSIVE REPORT AND RENEWAL PROPOSAL.
1974, 8p
Contract AT(04-3)-34

Descriptors: (*Plants, *Metabolism), (*Cell membranes, *Permeability), Biochemical reaction kinetics, Enzymes, Nutrients, Plant cells.

For abstract, see NSA 30 04, number 12146.

UCSD-34-P-150-X-3 PC$4.00/MF$2.25
Scripps Institution of Oceanography, La Jolla, Calif.
STUDIES ON THE GENETICS OF DROSOPHILA.
1974, 6p
Contract AT(04-3)-34

Descriptors: (*Drosophila, *Genetics), Chromosomes, Dna, Meiosis, Mutations, Spermatogenesis.

For abstract, see NSA 30 04, number 12147.

6D. Bionics

JPRS-62434 PC$3.75/MF$2.25
Joint Publications Research Service, Arlington, Va.
ELECTROMAGNETIC SIGNALLING IN ANIMATE NATURE,
A. S. Presman. 10 Jul 74, 70p
Trans. of mono. Elektromagnitnaya Signalizatsiya v Zhivoi Prirode, Moscow, 1974 p1-63.

Descriptors: *Electromagnetic fields, *Radio communication, *Biophysics, Signal, Physiological effects, Electrophysiology, Bionics, Animals, USSR, Translations.

Contents:
- Electromagnetic signalling in animate nature;
- Electromagnetic fields--information carriers in animate nature;
- Biorhythms, orientation and electromagnetic fields;
- Electromagnetic disturbances, radio background and the vital activity of organisms;
- Electromagnetic signalling inside the organism and between organisms;
- Means of studying electromagnetic signalling in animate nature.

6E. Clinical Medicine

AD-783 518/4GA PC$3.25/MF$2.25
Missouri Univ Columbia John M Dalton Research Center
INVESTIGATION OF THE EFFECTS OF LOW INTENSITY ELECTRICAL CURRENTS ON WOUND INFECTION AND HEALING.
Annual summary rept. no. 2, 1 Jul 72-30 Jun 73,
Blair A. Rowley, John M. McKenna, Lester E. Wolcott, and Gerald R. Chase. Feb 74, 32p
Contract DADA17-72-C-2006

Descriptors: *Electric current, *Healing, Wounds and injuries, Tissue culture, Bioelectricity, Pseudomonas aeroginosa, Bacteria, Infectious diseases, Experimental data, Therapy, Rabbits, Laboratory animals.

The report presents the results of a threefold project: application of cyclic electrical current to Pseudomonas aeruginosa infection; enhancement of wound healing using low level direct currents; and, electrical current effects on tissue cell cultures.

AD-783 557/2GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
MEDICAL NEWS - MODERN IMMUNOLOGY.
27 Jun 74, 23p Rept no. FTD-HT-23-2169-74
Edited trans. of Meditsinskaya Gazeta (USSR) v36 n52 p3, 29 Jun 73, by Ray E. Zarza.

Descriptors: *Immunology, Cytology, Infectious diseases, Clinical medicine, Genetics, Epidemiology, USSR, Translations.

In recent decades immunology had advanced into a new phase of development and has transformed into an independent general biological science which hold unquestionable interest for both the theorists and clinicians. Further progress of medicine depends to a considerable degree on its successes. This is why these problems became the prime attention of the participants of the XXXIV session of the Academy of Sciences USSR.

AD-783 741/2GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
ALLERGENICITY OF THE POLLEN OF CERTAIN PLANTS OF THE FERGANA VALLEY, USSR,
N. I. Pasternak, and V. G. Brysin. 8 Jul 74, 10p
Rept no. FTD-HT-23-2068-74
Edited trans. of Meditsinskii Zhurnal Uzbekistana (USSR) n5 p29-31 May 67, by Francis T. Russell.

Descriptors: *Pollen, *Allergic diseases, Plants(Botany), Complement(Biology), Immunology, Anaphylaxis, Serology, USSR, Translations, Laboratory animals, Antibodies.
Identifiers: Allergens.

The serological study of the nature of the antibodies and the intensiveness of their development showed that after a sensitizing administration of extract of pollen of mallow, hibiscus, cotton plant, kochia, and Indian corn, hemagglutinins develop. In addition to the hemagglutinizing antibodies to the pollen of mallow, hibiscus, and kochia, in the organism of the animals complement-fixing antibodies developed. The formation of several types of antibodies to the administration of an extract of one pollen may be explained by the complexity of its antigenic structure.

COO-1653-130(App.2) PC$4.00/MF$2.25
Washington Univ., St. Louis, Mo. Edward Mallinckrodt Inst. of Radiology.
BIOLOGIC CONSIDERATIONS IN ANATOMIC IMAGING WITH RADIONUCLIDES. APPENDIX II.
E. J. Potchen. 6p
Contract AT(11-1)-1653

Descriptors: (*Respiratory system diseases, *Diagnosis), (*Lungs, *Scintiscanning), Blood flow, Computer calculations, Data processing, Isomeric nuclei, Nuclear medicine, Patients, Radionuclide administration, Radiopharmaceuticals, Respiration, Technetium 99, Xenon 133.

For abstract, see NSA 30 05, number 13030.

COO-1826-31 PC$4.00/MF$2.25
Saint Mary's Hospital, Grand Junction, Colo. Dept. of Pathology.
CHECK SAMPLE--CYTOPATHOLOGY, CARCINOMA-IN-SITU.
G. Saccomanno. 1974, 8p

Descriptors: (*Respiratory system, Carcinomas), (*Carcinomas, *Cytology), Animal cells, Biomedical radiography, Pathology, Patients, Respiratory system diseases.

For abstract, see NSA 30 04, number 12118.

COO-3380-15 PC$4.00/MF$2.25
New York Univ., N.Y. Inst. of Environmental Medicine.
THEORETICAL ASPECTS OF GROWTH FRACTION IN A G SUB 0 MODEL.
F. J. Burns. 1974, 20p CONF-731005-4
Contract AT(11-1)-3380

Descriptors: (*Animal cells, *Growth), Biological materials, Distribution, Mechanics, Mitosis, Simulation.

For abstract, see NSA 30 04, number 12131.

PB-234 112/1GA PC$4.00/MF$2.25
Ohio State Univ., Columbus. Coll. of Medicine.
THE ONSET OF MYOCARDIAL INFARCTION AND SUDDEN DEATH. A CLINICAL PATHOLOGICAL CORRELATION.
Annual rept. Jan-Dec 73,
Martin D. Keller. Feb 74, 90p NIH/NHLI-N01-HL-0-2074-A74
Contract N01-HL-0-2074
See also PB-219 251.

Descriptors: *Myocardial infarction, *Heart diseases, *Cardiovascular diseases, Clinical medicine, Pathology, Pathophysiology, Computers, Epidemiology.
Identifiers: Emergency services.

As part of a collaborative study, clinical-pathological correlations are investigated in victims of sudden cardiac death to elucidate risk factors, premonitory symptoms, potential pathophysiologic mechanisms, and underlying pathology. This group will also serve as the center for computer-processing and analysis of the data acquired through the collaborative study.

PB-234 342/4GA PC$3.25/MF$2.25
King County Central Blood Bank, Seattle, Wash.
ABILITY OF STORED BLOOD TO TRANSPORT OXYGEN.
Progress rept. Feb 73-Feb 74,
Robert D. Woodson. Mar 74, 30p
Contract PHS-71-2105
See also PB-221 583.

Descriptors: *Oxygen consumption, *Blood preservation, *Blood transfusion, Rats, Shock(Pathology), Laboratory animals, Humans, Blood circulation, Storage, Hemoglobin, Blood pressure, Anemias.
Identifiers: *Hypovolemia, Glyceric acid/bis(dihydrogen-phosphate).

Effects of altering oxygen availability during hypovolemic shock were studied in rats. A 50% reduction in circulating hemoglobin concentration produced no effect on duration of time rats were able to tolerate shock, acid-base balance, mortality, or total oxygen consumption. Tolerance was shown to be due to an increase in cardiac output in anemic animals, probably due to a decrease in whole blood viscosity. Since animals with increased oxygen affinity and normal hemoglobin concentration would have normal blood viscosity, these animals may tolerate shock significantly less well than anemic animals. Effect of altered P50 when combined with anemia was studied in normal human volunteers. Acute induction of anemia produced increases in 2,3 Diphosphoglycerate (DPG) and P50 but no significant change in pH over the subsequent 10-14 days. Anemia caused a striking reduction in maximal exercise capacity and maximal oxygen consumption. Cardiac output was higher at rest and during exercise immediately after induction of anemia than when measured two weeks later.

PB-234 345/7GA PC$3.75/MF$2.25
Medical Lab. Automation, Inc., Mount Vernon, N.Y.
DONOR-RECIPIENT IDENTIFICATION SYSTEM RELATING TO BLOOD TRANSFUSION.
Annual rept. no. 2, 28 Jun 72-27 Jun 73,
Emil A. Scordato, Carlos Irazoqui, and John Gorman. 24 Jul 73, 52p NIH/NHLI-71-2393-B
Contract PHS-71-2393

Descriptors: *Blood transfusion, *Identification systems, *Blood banks, Medical services, Hospitals, Data processing, Magnetic tapes, Blood donors.
Identifiers: *Blood crossmatching.

The basic concepts of this system were demonstrated and proven during the first year of the contract by limited field-testing of initial prototype equipment at Roosevelt Hospital, N.Y.C. This annual report covers the activities of the second year, during which the novel first year's moving-head tape recorder was severely miniaturized, mobility and safety of the units was improved by conversion to battery power and the versatility of the system expanded by 2-track operation for both patient and donor identification information. A new accessory was created, a transaction recorder or 'Usage Monitor' which will detect if the system is not used at the compulsory preadministration check. The second year's instruments and improved machine-readable wristband, magnetic vacutainers and magnetic blood bag tags were extensively field-tested at Roosevelt Hospital. The tests have proven the feasibility of the system and its potential to eliminate all clerical errors in the donor-patient transfusion chain.

PB-234 479/4GA PC$3.00/MF$2.25
Microbiological Associates, Inc., Bethesda, Md.
THE PREPARATION OF HUMAN HISTOCOMPATIBILITY TYPING TRAYS AND TYPING TRAYS CONTAINING FROZEN, VIABLE HUMAN LYMPHOCYTES AND THE EVALUATION OF UNKNOWN HUMAN HISTOCOMPATIBILITY TYPING SERA.
Annual progress rept. 1 Apr 73-31 Mar 74,
Robert-John Trapani. 5 Apr 74, 5p NIH/TIB-016
Contract N01-AI-1-2443
Paper copy also available from GPO $0.55.

Descriptors: *Lymphocytes, *Tissue culture, Serology, Blood serum, Immunology, Transplantation, Blood cells, Evaluation, Preparation, Freezing, Trays.
Identifiers: *Histocompatibility.

The report discusses the preparation of twenty-four lots (each lot consisting of 1,000 plates) of Microtest Tissue Culture Plates containing HL-A phenotyping reference sera and control sera. Evaluated a total of two hundred and twenty-six unknown human sera against from thirty to fifty lymphocyte suspensions from normal donors comprising a well-characterized HL-A phenotyped panel and against approximately two hundred normal, unrelated, random donors. Evaluated two reference human serum samples and three pooled reference human sera samples for lymphocytotox-

icity against the cells of eighteen members of the HL-A characterized normal donor panel and of one hundred and six normal, unrelated, random donors. Evaluated (via titration methodology) one Horse anti-(lymphocyte) serum and three Rabbit anti-(lymphocyte) sera against the cells from each of fifty normal, unrelated, random donors.

PB-234 922/3GA PC$3.25/MF$2.25
Johns Hopkins Univ., Baltimore, Md. School of Medicine.
THE EFFECTS OF SURGICAL TREATMENT FOR FOCAL EPILEPSY. IMPAIRMENT AND REHABILITATION OF MEDICALLY INTRACTABLE EPILEPTICS.
Final rept.,
A. E. Walker, and Dietrich Blumer. Jul 73, 37p SRS-RD-2341-001
Grant SRS-RD-2341

Descriptors: *Rehabilitation, *Epilepsy, Patients, Clinical medicine, Surgery, Drug therapy, CNS disorders, Neurosurgery, Behavior disorders, Convulsive disorders, Physical therapy.
Identifiers: Chronic diseases.

The report discusses two groups of epileptic patients. One treated surgically (37 cases) and one treated medically (31 cases), were studied to ascertain factors of importance to their rehabilitation. Patients with chronic intractable epilepsy can be considered candidates for neurosurgical treatment if the seizures have not responded to anticonvulsant therapy, a localized epileptogenic lesion exists, and no physical contraindications are apparent. Ten patients were freed from the seizures after surgery, and 13 patients having behavior disorders prior to surgery were improved.

PB-234 925/6GA PC$4.75/MF$2.25
New England Deaconess Hospital, Boston, Mass.
THE SECOND HALF: REHABILITATION AFTER STOMA SURGERY.
Final rept.,
Edith S. Lenneberg, and Miriam Weiner. Dec 72, 140p SRS-13-55010-001
Grant SRS-13-55010

Descriptors: *Rehabilitation, *Gastrointestinal system, Medical equipment, Surgery, Patients, Medical research, Psychotherapy, New England, Facilities.
Identifiers: *Stoma.

The five-year (1967-1972) research and demonstration project was to improve the care, teaching, supervision, and services to stoma patients by preparing and testing effective methods for the implementation of a regional stoma rehabilitation center at the New England Deaconess Hospital. The outpatient clinic was available to all patients with urinary or fecal stomas in New England, and a total of 626 patients were seen, with an increase in the census from 83 during the first year of the grant to 201 in 1972. References and copies of 'A Very Private Matter; The Ostomy Handbook' and 'Beyond Surgery: Guidelines To The Development Of Stoma Clinics' are included.

PB-235 136/9GA PC$4.00/MF$2.25
Anderson (M. D.) Hospital and Tumor Inst., Houston, Tex.
STUDY OF LUMPHED EMA IN THE CANCER PATIENT.
Final rept.,
J. E. Healey. Oct 72, 82p SRS-RD-02235-001
Grant SRS-RD-02235

Descriptors: *Breast carcinoma, *Mastectomy, Surgery, Therapy, Swelling, Occurrence.
Identifiers: *Lymphedema, Arms(Anatomy).

A project (1967-1970) determined the incidence of lymphedema in breast cancer patients, its relationship with socioeconomic, preoperative, and operative variables, and postoperative management and measures which may decrease its incidence. Findings were that 39.9 percent of the 271 patients developed lymphedema, that 60.4 percent of the Negroes in the study developed it compared to 37.7 percent of the Caucasians, and that patients with a vertical surgical incision and patients without physical therapy treatments had a comparatively higher incidence of lymphedema.

PB-235 137/7GA PC$3.25/MF$2.25
Illinois Univ. Medical Center, Chicago. Center for Craniofacial Anomalies.
MAXILLOFACIAL PROSTHETIC DEMONSTRATION AND RESEARCH PROGRAM.
Final rept. 1 Apr 66-31 Jul 69,
Samuel Pruzansky. 31 Jul 69, 36p SRS-RD-02225-001
Grant SRS-RD-02225-M

Descriptors: *Prosthetic devices, *Face(Anatomy), Head(Anatomy), Abnormalities, Surgery, Injuries, Patients, Rehabilitation, Bibliographies.
Identifiers: Maxillofacial.

A program (1966-1969) was established to fulfill the needs of patients with congenital facial malformations or deformities produced by trauma or surgery for malignancy by providing prosthetic devices. Guidelines for evaluating patients are included. The center for craniofacial anomalies functions within the University of Illinois at Chicago. A curriculum was developed to train medical artists in the fabrication of prosthetic devices under the direction of qualified medical and dental personnel. This is a significant departure from other training programs. An extensive annotated bibliography is included.

PB-235 174/0GA PC$8.25/MF$2.25
Professional Rehabilitation Workers with the Adult Deaf, Inc., Silver Spring, Md.
DEAFNESS ANNUAL. CONTRIBUTED PAPERS AND REPORTS OF RESEARCH AND PROFESSIONAL ACTIVITIES IN THE AREA OF DEAFNESS. VOLUME III.
Final rept.,
Arthur G. Norris, and Glenn T. Lloyd. 1973, 380p SRS-22-55339-001
Grant SRS-22-55339

Descriptors: *Rehabilitation, *Auditory defects, Education, Mental deficiency, Blindness, Medical research, Medical services, Public health, Psychiatry, Handicapped workers.

The annual on deafness provides a compilation of significant articles dealing with research service programs, patterns of service, innovations in services, and other pertinent information in the area of deafness. It highlights many of the problems produced by the handicap of deafness. The volume is divided into three sections: contributed papers; Department of Health, Education and Welfare (DHEW) activities; and other grant activities in the area of deafness.

PB-235 180/7GA PC$4.75/MF$2.25
Chicago Heart Association, Ill.
A COMPREHENSIVE STROKE REHABILITATION PROJECT IN SELECTED GENERAL HOSPITALS.
Final rept.,
Edward E. Gordon, Raymond L. Kahn, Geraldine Joseph, Anita M. Weis, and Mary Ellen Lavery. May 72, 130p SRS-13-55179-001
Grant SRS-13-55179

Descriptors: *Rehabilitation, *Cerebral vascular accidents, Paralysis.
Identifiers: Health facilities, Community health services.

A project (1967-1971) to assist community general hospitals in the organization of resources already available in the hospital and in its related community to deliver early restorative care and rehabilitation services to patients with completed strokes found that stroke teams could be established at the hospitals with no extra costs involved, without extending the patients' length of stay in the hospital, and with coordination between the stroke team and other community agencies. The project involved the designing of a qualified model of rehabilitative care which was used by the staff to evaluate each individual hospital's program.

TID-26585 PC$4.00/MF$2.25
Pennsylvania Univ., Philadelphia.
CUMULATIVE ADDITIVE TANGENT CORRECTION (CATC): AN IMPROVED TECHNIQUE FOR THREE-DIMENSIONAL RECONSTRUCTION OF RADIONUCLIDE SCAN DATA. PROGRESS REPORT.
R. Q. Edwards, A. R. Ricci, and D. E. Kuhl. Apr 74, 10p
Contract AT(11-1)-3399

Descriptors: (*Scintiscanning, *Data processing), Computer calculations, Data acquisition, Diagnostic techniques, Display devices, Images, Nuclear medicine, Patients, Radionuclide administration.

For abstract, see NSA 30 05, number 13031.

6F. Environmental Biology

AAEC/LIB/Bib-418 PC$6.25/MF$2.25
Australian Atomic Energy Commission Research Establishment, Lucas Heights.
SECTION I. MEDITERRANEAN FRUIT FLY (CERATITIS CAPITATA (WIED.)) AND SECTION II. QUEENSLAND FRUIT FLY (DACUS TRYONI (FROGG.)) (BOTH DIPTERA:TEPHRITIDAE).
C. J. McDonald. May 74, 65p
U.S. Sales Only.

Descriptors: (*Fruit flies, *Radiosterilization), (*Sterile male technique, *Bibliographies), Biological radiation effects, Ceratitis capitata, Insect dispersal, Irradiation, Pest control, Populations, Pupae, Queensland.

For abstract, see NSA 30 05, number 12999.

ANL/ES-40(Vol.15) PC$5.45/MF$2.25
Argonne National Lab., Ill.
ENVIRONMENTAL STATUS OF THE LAKE MICHIGAN REGION. VOLUME 15. MAMMALS OF THE LAKE MICHIGAN DRAINAGE BASIN.
C. A. Long. May 74, 108p
Contract W-31-109-eng-38

Descriptors: (*Wild animals, *Ecology), (*Mammals, Ecology), Illinois, Indiana, Lake michigan, Michigan, Wisconsin.

For abstract, see NSA 30 05, number 12710.

COO-1156-67 PC$9.25/MF$2.25
Colorado State Univ., Fort Collins.
RANGELAND GRASSHOPPER FORAGING IMPACT.
L. L. Cadwell. Aug 73, 122p

Descriptors: (*Grasshoppers, *Diet), Biological effects, Colorado, Food chains, Grass, Phosphorus 32, Terrestrial ecosystems, Tracer techniques.

For abstract, see NSA 30 04, number 12116.

COO-1820-1 PC$5.25/MF$2.25
Minnesota Univ., St. Paul.
ECOLOGICAL STUDIES ON THE DYNAMICS OF PLANKTONIC BLUE-GREEN ALGAE WITH SPECIAL REFERENCE TO THEIR MICROSTRATIFICATION. PROGRESS REPORT, SEPTEMBER 1, 1973--AUGUST 31, 1974.
R. K. Maxwell. 1974, 42p
Contract AT(11-1)-1820

Descriptors: (*Algae, *Population dynamics), Chlorophyll, Ecology, Lakes, Photosynthesis, Plankton, Seasons, Visible radiation.

For abstract, see NSA 30 04, number 12117.

COO-3278-23 PC$4.75/MF$2.25
Johns Hopkins Univ., Baltimore, Md.
COMPARATIVE STUDY OF PRIMARY PRODUCTION AND STANDING CROPS OF PHYTOPLANKTON IN A PORTION OF THE UPPER CHESAPEAKE BAY SUBSEQUENT TO TROPICAL STORM AGNES.
M. E. Loftus, and H. H. Seliger. 1974, 35p
Contract AT(11-1)-3278

Descriptors: (*Plankton, *Ecology), (*Chesapeake bay, Plankton), Algae, Communities, Statistics.

For abstract, see NSA 30 04, number 12128.

COO-3521-3 PC$9.25/MF$2.25
Surtsey Research Society, Reykjavik (Iceland).
TECHNICAL PROGRESS REPORT OF BIOLOGICAL RESEARCH ON THE VOLCANIC ISLAND SURTSEY AND ENVIRONMENT FOR THE YEAR 1973.
S. Fridriksson. 124p
Contract AT(11-1)-3521

Descriptors: (*Iceland, *Environment), Birds, Insects, Islands, Lichens, Meteorology, Microorganisms, Mosses, Plants, Soils, Vertebrates.

For abstract, see NSA 30 05, number 14717.

ORO-4254-16 PC$6.25/MF$2.25
Oklahoma State Univ., Stillwater.
BIOGEOCHEMISTRY OF A RESERVOIR ECOSYSTEM. REPORT NO. 5, JUNE 1, 1973–MAY 31, 1974.
L. P. Varga, and D. W. Toetz. 1974, 62p
Contract AT(40-1)-4254

Descriptors: (*Aquatic ecosystems, *Biogeochemistry), Algae, Chlorine, Chlorophyll, Computer codes, Nitrates, Nitrogen 15, Solar radiation, Tracer techniques, Water reservoirs.

For abstract, see NSA 30 04, number 12141.

PB-234 589/0GA PC$6.00/MF$2.25
Illinois Univ., Urbana.
SURVIVAL OF VIRUSES AND BACTERIA IN A SIMULATED SANITARY LANDFILL.
Research rept.,
R. S. Engelbrecht. 14 Dec 73, 57p Tissue-API-73-1

Descriptors: *Earth fills, *Viruses, *Bacteria, Pathology, Simulation, Waste disposal, Refuse disposal, Microbiology, Lysimeters, Measuring instruments, Leaching, Coliform bacteria, Streptococcus, Infectious diseases, Temperature.
Identifiers: *Sanitary landfills, *Solid waste disposal, *Pathogens.

The report studies the problem of pathogens in sanitary landfills. A large scale lysimeter was operated to simulate a sanitary landfill. Lysimeter was filled with residential solid waste and seeded with specific amounts of viruses. Leachate generated by landfill was analyzed for viruses and bacteria. Under the conditions of lysimeter operation and considering the virus detection method used, no viruses were found in the leachate. The bacterial content of the leachate, as measured by total plate count, total coliforms, fecal coliforms, and fecal streptococci, was found to decrease with time of lysimeter operation.

PB-234 608/8GA PC$4.00/MF$2.25
American National Red Cross, Bethesda, Md. Blood Research Lab. National Heart and Lung Inst., Bethesda, Md.
STUDIES ON IMPROVING AND STANDARDIZING THE PROCESS FOR PREPARATION OF CRYOPRECIPITATED AND ANTIHEMOPHILIC FACTOR (HUMAN).
Final rept. 1971-73,
Demetrios C. Triantaphyllopoulos. 23 May 74, 13p
NIH/NHLI-71-2394
Contract PHS-71-2394

Descriptors: *Hemophilia, *Blood coagulation, *Blood preservation, Blood diseases, Thrombocytopenia, Storage, blood platelets, Blood transfusion, Temperature, Enzymes.
Identifiers: *Blood coagulation factor VIII.

Storage of ACD blood for six hours at 0, 4 and 24C results in a statistically significant drop of factor VIII in the derived cryoprecipitates: 39% at 0; 66% at 4C; and 22% at 24C. Whether 24C is the best temperature for storing is doubtful. At this temperature factor VIII may be undergoing partial activation by proteolytic enzymes. Thawing the frozen plasma at 4C does not present any significant advantage over thawing at 37C. Blood group A plasma is significantly richer in factor VIII than blood group O plasma.

PB-234 644/3GA PC$3.00/MF$2.25
Savannah River Ecology Lab., Aiken, S.C.
A REVIEW OF THE PHYSIOLOGICAL IMPACT OF MERCURIALS.
Ecological research series,
M. Catherine Ferens. Feb 74, 62p* EPA-660/3-73-022
Grant EPA-R-800510
Paper copy also available from GPO, PC$1.00.

Descriptors: *Mercury poisoning, *Toxicology, *Reviews, Mercury organic compounds, Toxic diseases, Brain, Biochemistry, Cells(Biology), Kidney, Plants(Botany), Mercury inorganic compounds, Growth, Physiological effects, Central nervous system, Metabolism, Absorption(Biology), Photosynthesis.
Identifiers: Tricarboxylic acid cycle.

Literature on the biological effects of mercurials was reviewed with the purpose of understanding impact on individual organisms in terms of biochemical or cellular damage. Mercurialism is manifested primarily in kidney or brain damage in animals and in growth reduction in plants. Exposure to inorganic mercury compounds usually results in kidney damage while alkyl mercurialism is characterized by brain damage; however, some degree of both kidney and neurological injury results from exposure to either category of mercurials. Kidney injury is due apparently to damage of Kreb's cycle enzymes, thus reducing available energy to actively resorbtions. Impaired protein synthesis as well as reduction in activity of Kreb's cycle enzymes may be important in brain damage resulting from mercury poisoning.

TID-26605 PC$15.50/MF$2.25
Miami Univ., Coral Gables, Fla.
ECOLOGICAL STUDY OF SOUTH BISCAYNE BAY AND CARD SOUND, THE THALASSIA MICROCOSM. ANNUAL REPORT.
A. Thorhaug. Jun 74, 246p
Contract AT(40-1)-4493

Descriptors: (*Biscayne bay, *Ecology), (*Thermal effluents, *Biological effects), Algae, Aquatic ecosystems, Communities, Florida, Grass, Liquid wastes, Plants, Terrestrial ecosystems, Turkey point-3 reactor, Turkey point-4 reactor, Waste disposal.

For abstract, see NSA 30 05, number 12715.

6G. Escape, Rescue, and Survival

AD-783 555/6GA PC$3.00/MF$2.25
Coast Guard Research and Development Center Groton Conn
FLOTATION FOR STOKES LITTER.
Final rept.
Sep 73, 23p Rept no. CGR/DC-3/73 USCG-D-30-74

Descriptors: *Stretchers, *Flotation, Marine safety equipment, Floating bodies, Buoyancy, Ballast, Naval equipment, Coast Guard research.
Identifiers: Stokes litters.

A flotation system for the Stokes litter, protective frame, and trolley block used in manila highline operations was designed and tested. The system is compatible with the flotation collar design used in other Coast Guard Stokes Litter applications. It floats the patient with the water level not higher than the suprastranal notch and with his head back. It returns to the upright position if overturned and does not require the patient to wear a personal flotation device. (Author)

6H. Food

AD-783 812/1GA PC$9.00/MF$2.25
Naval Postgraduate School Monterey Calif
DEVELOPMENT OF A COMMODITY STATISTICAL SAMPLING AND GRADING SYSTEM.
Master's thesis,
Harry Blaine Robins, Jr., and Lewis Ernest Gayton. Jun 74, 117p

Descriptors: *Vegetables, *Food processing, Statistical samples, Frozen foods, Standards, Quality, Production, Regression analysis, Industries, Theses, California.
Identifiers: Cauliflower, Food industry.

The rapidly growing frozen vegetable industry of California affords a unique opportunity to assess the relationships between the industry's two primary participants, the independent grower and the frozen food processing company. Intrinsically linked to this matter is the basis on which the processing company determines the quality of the produce, its actual or predicted recoverable proportion, the amount of remuneration due the grower, and the overall accuracy of this process. In seeking to establish a more consistent, accurate, and timely means of predicting actual production output, the use of statistical sampling and grading has become prevalent in the industry. The thesis attempts to evaluate a procedure for predictive analysis of one commodity in order to demonstrate the utility of this procedure for a wide range of productive processes. (Modified author abstract)

COM-74-11365/5GA PC$5.00/MF$2.25
Oregon State Univ., Corvallis.
DEVELOPMENT OF NEW HUMAN FOOD PRODUCTS FROM SHAD.
Completion rept. Feb 66-Jun 70,
David Crawford. Jul 70, 40p NOAA-74062715

Descriptors: *Fishes, *Food processing, Frozen foods, Food storage, Acceptability, Food preparation.
Identifiers: Shad.

Five studies on the development of new human food products from shad are presented. In the first the objective was to prepare a smoked sausage of the pepperoni type using shad and a complimentary ground fish. The second was to determine the storage stability and acceptance of a raw and precooked, frozen, brown and serve fish sausage. The third was an annual progress report which involves the use of an antioxidant to protect ground frozen shad. The fourth was to formulate an acceptable fish patty which would be adaptable to machine formulation. In the last report a deboning machine of Japanese manufacture was evaluated as a means of separating bone and skin from dressed shad.

COM-74-11403/4GA Reprint
Massachusetts Inst. of Tech., Cambridge. Dept. of Nutrition and Food Science.

SQUID PROTEIN ISOLATE: EFFECT OF PROCESSING CONDITIONS ON RECOVERY YIELDS,
Leslie N. Kahn, Zeki Berk, Ernst R. Pariser, Samual A. Goldblith, and James M. Flink. 1974, 6p MITSG-74-30, Contrib-2185 NOAA-74072905 NOAA-2-35150, NOAA-NG-43-72
Index No. 74-330-Fij.
Pub. in Jnl. of Food Science, v39 p592-595 1974.

Descriptors: *Squids, *Food processing, Cephalopoda, Aquatic animals, Extraction, Mollusca, Proteins, Invertebrates, Dehydration, Precipitation(Chemistry).
Identifiers: Sea Grant program.

Over 80% of the squid protein is extractible in alkaline medium or salt solutions. Extraction yields in water at pH 7.0 were below 70%. An isolated protein can be obtained from extracts by isoelectric precipitation or by direct dehydration after salt removal. This study of the effects of various process parameters on protein extraction yields illustrates the factors that bear importantly upon the extraction.

PATENT-3 726 693 Not available NTIS
Department of the Army Washington D C
DEHYDRATED FOOD COATED WITH EDIBLE OIL, GELATIN, GLYCERINE AQUEOUS EMULSION.
Patent,
Norman E. Harris. Filed 22 Dec 70, patented 10 Apr 73, 4p Rept nos. PAT-APPL-100 772,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Dehydrated foods, *Food preservation, *Patents, Concentrated foods, Moisture, Hardness, Exposure(General), Atmospheric temperature, Vegetable oils, Gelatins, Glycerols, Casein, Additives.
Identifiers: PAT-CL-99-199.

The invention relates to coated dehydrated foods. Hardening of coated food items, such as dehydrated and compressed foods coated with an aqueous emulsion of edible oil, caseinate, glycerine and gelatin, which occurs upon exposure to temperatures above 85F is eliminated when the moisture level of the coated food items is held below 2% by weight.

PATENT-3 732 727 Not available NTIS
Department of the Army Washington D C
METHOD AND APPARATUS FOR TESTING THE TENDERNESS OF MEAT.
Patent,
Larry C. Hinnergardt, and Justin M. Tuomy. Filed 7 Dec 71, patented 15 May 73, 6p Rept nos. PAT-APPL-205 736,
Previously filed as PAT-APPL-34 288, 4 May 70.
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Meat, *Measuring instruments, *Test methods, *Patents, Penetration, Force(Mechanics), Charts, Recording systems, Nondestructive testing.
Identifiers: PAT-CL-73-81, Tenderness.

The invention relates to a method and apparatus for testing the tenderness of a slice of meat without destroying the integrity of the slice of meat insofar as subsequent cooking and eating thereof are concerned. The invention relates more particularly to a method and apparatus for predicting the tenderness of cooked meat from the resistance of the uncooked meat to being pierced or penetrated by elongated needle-like piercing elements which do not destroy or seriously damage the meat during the testing thereof.

see prices of individual reports FDABF-GRAS-233
JUL 74,
Final rept. 1950-74.
7 volumes308p*Scientific Literature Reviews on Generall

The Scientific Literature Review summarizes the available scientific literature from 1950 to 1974 related to the safety of 276 synthetic flavor substances used as food ingredients. The substances are selected from aliphatic primary alcohols, aldehydes, acids, and related esters. The review summarizes the natural occurrence, usage, chemical, and biological data on the substances in a 2340 page review containing 9869 references. For individual volumes, see below:
- Volume 1. Background, Procedures Followed, Substances Reviewed. PC$7.25, MF$1.45 **PB-234 881/1GA**
- Volume 2. Abstracts of Papers Containing Biological Data. PC$7.50, MF$1.45 **PB-234 882/9GA**
- Volume 3. Presence and Levels of Reviewed Substances in Foods. Natural Occurrence-Part 1. PC$8.25, MF$1.45 **PB-234 883/7GA**
- Volume 4. Presence and Levels of Reviewed Substances in Foods. Natural Occurrence-Part 2. PC$7.25, MF$1.45 **PB-234 884/5GA**
- Volume 5. Presence and Levels of Reviewed Substances in Foods. Usage levels from Surveys by Flavor and Extract. PC$7.25, MF$1.45 **PB-234 885/2GA**
- Volume 6. Bibliography-Part 1. PC$8.00, MF$1.45 **PB-234 886/0GA**
- Volume 7. Bibliography-Part 2. PC$8.00, MF$1.45 **PB-234 887/8GA**

see prices of individual reports PC$4.00/MF$2.25
1974,
Final rept. 1920-74.
6 issues99p*Scientific Literature Reviews on Generall

Literature from 1920 to 1974 relating to the safety of food additives is summarized. Chemical information, biological data, and biochemical aspects are discussed. For individual reports, see below:
- FDABF-GRAS-224, TR-72-1552-44. Dextrans. Feb 74, 99p, PC$4.00, MF$1.45 **PB-234 889/4GA**
- FDABF-GRAS-226, TR-72-1552-47. Biotin. Jun 74, 140p, PC$4.75, MF$1.45 **PB-234 890/2GA**
- FDABF-GRAS-227, TR-72-1552-46. Lard and Lard Oil. Jun 74, 85p, PC$4.00, MF$1.45 **PB-234 891/0GA**
- FDABF-GRAS-228, TR-74-1552-48. Pantothenates. Jun 74, 79p, PC$4.00, MF$1.45 **PB-234 892/8GA**
- FDABF-GRAS-229. Bentonite and Clay. Jun 74, 73p, PC$3.75, MF$1.45 **PB-234 893/6GA**
- FDABF-GRAS-232, TR-72-1552-45. Caffeine. Mar 74, 363p, PC$8.00, MF$1.45 **PB-234 894/4GA**

see prices of individual reports PC$4.75/MF$2.25
1974,
Final rept. 1920-74.
7 issues128p*Scientific Literature Reviews on Generall

Literature from 1920 to 1974 relating to the safety of food additives is summarized. Chemical information, biological data, and biochemical aspects are discussed. For individual reports see below:
- FDABF-GRAS-223. Starter Distillate. Jul 74, 128p, PC$4.75, MF$1.45 **PB-234 896/9GA**
- FDABF-GRAS-225. Methyl and Ethyl Acrylates. Apr 74, 85p, PC$4.00, MF$1.45 **PB-234 897/7GA**
- FDABF-GRAS-230. Acetic Acid and Acetates. Feb 74, 155p, PC$5.00, MF$1.45 **PB-234 898/5GA**
- FDABF-GRAS-231. Sodium and Potassium. Mar 74, 60p PC$3.75, MF$1.45 **PB-234 899/3GA**
- FDABF-GRAS-234. Corn Silk. Apr 74, 31p, PC$3.25, MF$1.45 **PB-234 900/9GA**
- FDABF-GRAS-235. Vitamin D. Jul 74, 492p, PC$9.75, MF$1.45 **PB-234 901/7GA**
- FDABF-GRAS-236. Casein. Jul 74, 144p, PC$4.75, MF$1.45 **PB-234 902/5GA**

TT-73-54047 PC$3.00
Department of Agriculture, Washington, D.C.
POTASSIUM CONTENT IN THE BLACK CURRENT FRUIT (ZAWARTOSC POTASU W OWOCACH CZARNEJ PORZECZKI),
K. Bogdanski, M. Dabrowska, and H. Bogdanska. 5p
Trans. of Roczniki Panstwowego Zakladu Higieny (Poland) v14 nl p93-95 1963, by A. Skup. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Berries, *Potassium, *Nutritive value, Optical measurement, Fruits, Chemical analysis, Photometry, Poland, Translations.

Potassium content in the ash of fruit of nine varieties of black currant was found to be on the average 43.3%, ranging from 30.2 to 47.3%. In terms of fresh fruit the potassium content averaged 0.25%. The lowest values were found in the earliest varieties of the black currant (0.16%) compared to the latest ones (0.19%).

6J. Industrial (Occupational) Medicine

JPRS-62281 PC$3.25/MF$2.25
Joint Publications Research Service, Arlington, Va.
LABOR PSYCHOLOGY AND ESTHETICS,
V. S. Lukyanov, and A. G. Genkin. 50p
Trans. of mono. Psikhologiya i Estetika Truda, Moscow, 1973 p1-64.

Descriptors: *Industrial psychology, *Personnel, Human factors engineering, Motivation, Esthetics, Personality, USSR, Translations.

The report contains data on medical and psychological achievements leading to a rise in labor productivity and a reduction in fatigue and industrial diseases.

LA-5555-PR PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
AEROSOL RESEARCH AND DEVELOPMENT RELATED TO HEALTH HAZARD ANALYSIS. PROGRESS REPORT, JULY 1–DECEMBER 31, 1973.
H. J. Ettinger, C. I. Fairchild, and L. W. Ortiz. 23p
Contract W-7405-eng-36

Descriptors: (*Air filters, *Performance testing), (*Aerosols, *Research programs), (*Samplers, *Calibration), Coal, Dusts, Efficiency, Fibers, Filtration, Glass, Health hazards, Respirators.

For abstract, see NSA 30 05, number 12637.

6K. Life Support

AD-783 595/2GA Reprint
Aerospace Medical Research Lab Wright-Patterson AFB Ohio
G SUIT FILLING PRESSURES DETERMINED BY SEAT BACK ANGLE,
John W. Frazier, Raymond U. Whitney, Alan B. Ashare, Dana B. Rogers, and Vance D. Skowronski. 5p
Availability: Pub. in Aerospace Medicine, v45 n7 p755-757 Jul 74.

Descriptors: *G suits, *Pressurization, *Tolerances(Physiology), Ejection seats, Configurations, Blood volume, Blood circulation, Aeronautics, Jet fighters.

Identifiers: Articulating seats, *Body positioning, *Inflation pressures.

A series of human closed-loop tracking experiments was run on the Dynamic Environment Simulator. Performance was measured at levels of 4, 5, 6, 7, and 8G with seat back angles of 30, 45, 55, and 65 degrees. The G-suit pressure schedule was modified for each seat configuration by mounting the G valve on the seat back pan. The pressure schedules and subjects' responses are presented. It is concluded that G suit pressures can be significantly reduced as the seat configuration becomes more supine. (Author)

AD-783 672/9GA PC$3.00/MF$2.25
Navy Experimental Diving Unit Washington D C
COMPARISON OF DEMAND SCUBA: EVALUATION REPORT.
Final rept.,
F. J. Rickert. 22p

Descriptors: *Diver equipment, *Breathing apparatus, Standards, Scuba diving, Respiration.
Identifiers: *Open circuit oxygen scuba.

The report provides a comparative analysis of four open-circuit demand scuba and derives performance standards against which other open-circuit scuba may be compared. The comparative analysis covers the U.S. Divers Aqua-Lung, and three commercial units (the Air Lung, the Hydro-Pak, and the Div-Air). The analysis is based on performance records made during evaluation of the four scuba for Naval service, and includes both objective and subjective performance records. (Modified author abstract)

AD-783 673/7GA PC$3.25/MF$2.25
Navy Experimental Diving Unit Washington D C
COMPARISON OF CDBA, FLATUS II, AND MIKE '55 MIXED-GAS SCUBA.
Final rept.,
J. V. Dwyer. 32p

Descriptors: *Diver equipment, *Breathing apparatus, Mechanical drawings, Regulators, Scuba diving.
Identifiers: *Mixed gas scuba, CDBA breathing apparatus, LES breathing apparatus, MIKE 55 breathing apparatus, Flatus 2 breathing apparatus.

The report briefly describes four mixed-gas scuba (CDBA, Flatus II, LES, and MIKE '55 Units), referring to the individual reports, and includes a schematic diagram of each apparatus. It presents a feature-by-feature comparison of the units, and discusses the advantages and disadvantages of the various features. (Modified author abstract)

AD-783 675/2GA PC$3.25/MF$2.25
Navy Experimental Diving Unit Washington D C
SUPPLEMENTARY REPORT OF THE PIRELLI OXYGEN UNDERWATER BREATHING APPARATUS.
Final rept.,
J. V. Dwyer, and C. T. Kincaid. 36p

Descriptors: *Diver equipment, *Breathing apparatus, Oxygen, Scuba diving, Depth, Hazards.
Identifiers: *Pirelli breathing apparatus.

The report covers a secondary investigation into the adequacy of the Italian Scuba known as the Pirelli for use in the Naval service. The evaluation places a limitation in the conditions for which the Pirelli is satisfactory: Namely, for shallow diving conditions of rest or very moderate work. The equipment is not adequate for swimming conditions in excess of one hour and thirty minutes, it is hazardous for any swimming or diving conditions involving heavy work, and it is subject to the same maximum 30 foot depth limitation as all other oxygen Scuba's. (Modified author abstract)

AD-783 905/3GA MF$2.25
Navy Experimental Diving Unit Washington D C
NORTHILL AIR LUNG FIELD CHANGES.
Final rept.,
C. J. Leyden. 73p
Availability: Available in microfiche only.

Descriptors: *Breathing apparatus, *Diver equipment, Naval research, Test methods, Swimming.
Identifiers: *Underwater breathing equipment, Evaluation, Recommendations, Underwater life support systems.

The evaluation was made to determine the suitability of the Northill Air Lung for Naval service. The apparatus was evaluated objectively by breathing machine tests and depth swimming test, with respiratory pressure instrumentation. It was evaluated subjectively by swimming pool runs. Breathing machine test results are summarized as graphs of peak inspiratory pressure against cylinder pressure. Depth swimming test results are summarized as graphs of peak respiratory pressures, cylinder pressure, respiratory minute volume and respiratory rate, all against time. Subjective comments for swimming pool runs are given verbatim. The results are discussed constructively and lead to specific conclusions about the apparatus and its suitability for Naval service. (Author)

TT-73-54020 PC$3.00
Department of Agriculture, Washington, D.C.
THE PRODUCTION OF THE ANTIFUNGAL ANTIBIOTIC SUBSTANCE BY STREPTOMYCES SP. NO. 121 (PRODUKCJA PRZECIWDROZDZOWEJ SUBSTANCJI ANTYBIOTYCZNEJ PRZEZ STREPTOMYCES SP. NR. 121),
Izabela Szajer. 14p
Trans. of Marie Curie-Skodowska Univ. Annals (Poland) Ser-C v23 n4 p33-44 1968, by Zdzislaw Markiewicz. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Fungicides, *Streptomyces, *Antibiotics, Bacteria, Cryogenics, Culture media, Tables(Data), Poland, Translations, Yeasts, Fungi, Taxonomy, Storage.
Identifiers: Streptomyces globisporus.

The isolated Streptomyces sp. No. 121 showed strong antibiotical properties against many different species of yeasts and absence of such action against bacteria and moulds. An attempt to classify Streptomyces sp. No. 121 revealed a certain similarity to Streptomyces globisporus. Maximum concentration of the antibiotic substance was achieved with submerged culture in Blieckefeldt medium. As a result of extraction of the mycelium with methyl alcohol and partial purification an antibiotic substance in the form of a crude preparation was obtained. The antibiotic preparation stored as a dry matter at low temperature preserved its activity over a long period.

6L. Medical and Hospital Equipment

AD-783 481/5GA PC$4.50/MF$2.25
Edgewood Arsenal Aberdeen Proving Ground Md
DEPOSITION OF ULTRAFINE AEROSOLS IN THE RESPIRATORY TRACT OF HUMAN VOLUNTEERS.
Special publication, Aug 72-Jun 73,
Frank Shanty. 102p
Doctoral thesis.

Descriptors: *Aerosols, *Respiratory system, Theses, Humans, Radioactive isotopes, Tracer studies, Ultrafines, Medical equipment, Lung, Laboratory equipment.

Techniques were devised for generating and sizing an ultrafine, monodisperse aerosol and the aerosol was used in deposition studies in the respiratory tract of human test subjects. A simple technique was developed for producing and sizing an 0.08 micrometer aerosol tagged with TC99m, a gamma-emitting radioisotope with a half life of 6 hours. The test aerosol was reasonably monodisperse, exhibiting geometric standard deviations in the range of 1.05 to 1.35. Hygroscopic growth of the test aerosol under conditions simulating humidification in the respiratory tract was measured. An apparatus was constructed for use in conducting aerosol breathing studies. The experimental setup would also be suitable for lung scanning studies, including regional deposition studies. Fractional deposition of the test aerosol was measured for both mouth breathing and nasal breathing. (Author)

AD-783 482/3GA PC$3.00/MF$2.25
Edgewood Arsenal Aberdeen Proving Ground Md
UTILIZATION OF GAS SPARGER FOR SUBMERGED CULTURE GROWTH OF L CELLS AND MANIFOLD FOR TRANSFER OPERATIONS.
Technical rept. Feb 69-Jul 71,
Michael Shepel. 19p

Descriptors: *Culture media, *Tissue culture cells, Fermentation, Cells(Biology), Laboratory equipment, Chemical reactions, Mice, Transfer.
Identifiers: *Spargers, Mouse fibroblast cells.

A gas sparger previously described for use in Bellco culture flasks has been tested in the laboratory to grow L-DR substrain mouse cells in a chemically defined medium. Adequate and continued propagation of L cells has been accomplished by using the criteria of doubling time, final population density, and recovery analysis following each 4-day passage. An inoculum of 5.24 x 1,00000.0 cells per milliliter (19.1 log (base 2) units) grew to a peak population level of 3.3 x 1,000,000.0 cells per milliliter (21.7 log (base 2 units) at the end of the log phase. A population doubling time of 25 hours was observed in the growth cycle of L-DR cells. In addition, the study showed that one ml of packed cell volume was equivalent to 5.46 x 1,000,000.0 cells. Extension of this value led to a determination of the productive output of the suspension gas culture system over a period of 32 days. The manifold-transfer apparatus performed according to design requirements for transfer operations. (Author)

AD-783 498/9GA PC$3.75/MF$2.25
Academy of Health Sciences (Army) Fort Sam Houston Tex Health Care Studies Div
SURVEY OF MOBILE HEALTH UNITS.
Final rept. Apr-May 74,
James J. James, and Richard B. Stuart. 61p

Descriptors: *Medical services, Texas, New York, Surveys, Military medicine, Assessment, Public health, Clinical medicine, Facilities, Mobile.
Identifiers: *Health care delivery systems, Evaluation, Recommendations, *Health care facilities, *Mobile equipment.

The objectives of this survey was to collect available existent military and civilian data pertaining to the utilization of mobile health units for the delivery of health services, and to produce a document that could be used as a reference source for others interested in the area. A comprehensive literature review was completed and reported. On-site visits were made to four operational units in Texas and New York, and a visit was made to Medical Coaches, Incorporated in Oneonta, NY, which specializes in the production of mobile health units. All of the above information was collated and then evaluated for recurring advantages and disadvantages and other significant points which were reported. It was concluded that mobile units can be utilized as a satisfactory means of delivering health services. (Modified author abstract)

AD-783 520/0GA PC$3.00/MF$2.25
Armed Forces Radiobiology Research Inst Bethesda Md

A PRACTICAL CIRCUIT FOR HYDROGEN CLEARANCE BLOOD FLOW MEASUREMENT.
Technical note,
J. A. Willis, T. F. Doyle , A. Ramirez, A. I. Kobrine, and A. N. Martins. 17p

Descriptors: *Blood flow, *Electrophysiology, *Hydrogen, Medical equipment, Tissues(Biology), Laboratory equipment, Oscillographs, Electrodes, Circuits, In vivo analysis, In vitro analysis.

An electronic circuit which may be used to record tissue hydrogen concentrations with platinum electrodes is described. This circuit provides constant electrode polarization potential for a wide range of electrode currents and also provides a stable, artifact-free output which may be easily connected to standard laboratory oscillographs. Both in vitro and in vivo experiments demonstrating the circuit's utility in hydrogen clearance blood flow determinations are presented. (Author)

AD-783 773/5GA PC$3.00/MF$2.25
School of Aerospace Medicine Brooks AFB Tex
AEROMEDICAL RADIOFREQUENCY NURSE-CALL SYSTEM: MEDICALL.
Final rept. Aug 70-Jul 73,
Henry Buchanan, and Constance R. Sturim. 15p

Descriptors: *Aeromedical evacuation, *Intercommunication systems, Aerospace medicine, Patients, Stretchers, Radiofrequency, Nurses, Medical personnel, Transmitters.
Identifiers: Medicall.

The radiofrequency nurse-call system (Medicall) was designed to enable litter patients on multimission aircraft to signal an aeromedical crewmember for assistance. The system is inexpensive, portable, quiet, easily installed, and simple to operate. It does not interfere with other electronic or electrical systems aboard the aircraft nor require installing a wiring harness. When a patient pushes the button on the transmitter, a signal lamp on the receiver lights up to show that help is needed, and a light on the transmitter shows which patient has called for help. Operational tests of four prototype systems and laboratory environmental tests indicated the system performed satisfactorily and in compliance with military standards. Military Airlift Command medical personnel recommended the system be standardized for routine use in Air Force aeromedical airlift missions. (Modified author abstract)

AD-783 926/9GA PC$3.75/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
CLINICAL ELECTROENCEPHALOGRAPHY,
V. S. Rusinov, and Y. E. Mayorchik. 52p
Edited trans. of mono. Klinicheskaya Elektroentsefalografiya, n.p., 1973 p19-48.

Descriptors: *Electroencephalography, Electrophysiology, Bioengineering, Medical equipment, Clinical medicine, USSR, Translations.

The purpose of the report is to become familiar with the basic operating principles of electroencephalographic apparatus, possible methods of regulating the sensitivity and bandwidth of the channels, recognition of artifacts in the recording and the use of functional loads.

PB-234 473/7GA PC$3.75/MF$2.25
Colorado Univ., Denver. Medical Center.
DEVELOPMENT OF A HIGH PERFORMANCE RESPIRATORY MASS SPECTROMETER.
Annual rept. Jun 73-Jun 74,
Ingvar E. Sodal. Jun 74, 55p NIH/NHLI-N01-HR3-3001-A73/74
Contract N01-HR-3-3001

Descriptors: *Mass spectrometers, *Gas analysis, *Respiration, Physiology, Vacuum, Computers, Bioinstrumentation, Measuring instruments, Medical equipment, Bioengineering.

A small quadrupole mass spectrometer has been designed specifically for use in respiratory gas analysis. This system employs a unique inlet system consisting of a precision servo controlled leak valve making it possible to introduce into the mass analyzer gas samples in a highly controlled manner such that the integrity of the sample is maintained. A closed, low volume (.2 cc) ion source is connected to the inlet valve. A pressure monitoring plate in the ionizer is used to control the operating of the inlet valve. The system has a high speed of response and it is designed to detect rapid changes in gas mixtures during a single breathing cycle. The mass spectrometer is operated by a small digital computer which also samples the output signals and provides a real-time processing of data. The system is compact, has a high level of mobility and can be adapted to most environments in the physiology laboratory and in the clinical environment.

PB-234 500/7GA PC$3.00/MF$2.25
Washington Univ., Seattle. School of Medicine.
STUDY OF HYPERLIPIDEMIA AND ATHEROGENESIS.
Annual rept. 18 Jun 73-17 Jun 74,
John D. Bagdade. 14 Jan 74, 15p
Contract N01-AM-3-2212

Descriptors: *Lipid metabolism, *Vascular diseases, *Dialysis, Artificial kidneys, Urinary diseases, Uremia, Blood, Mechanical organs, Rats, Models, Laboratory animals, Physiology, Surgical transplantation.
Identifiers: *Hyperlipidemia, *Atherogenesis.

Survival of dialysis patients is significantly shortened by premature cardiovascular disease. Since these patients also have hyperlipidemia, a well known cardiovascular risk factor in the non-uremic population, a chronically uremic rat model was developed in which to study the mechanisms of hyperlipidemia and atherogenesis in renal failure. The Sprague-Dawley rat was shown to differ from man in his adaptation to chronic uremia and not develop hypertriglyceridemia. While the hepatic production rate of triglyceride-rich lipoprotein appears to be normal in these rats after ten weeks of chronic uremia, the regulation of the triglyceride-removal enzyme lipoprotein lipase was impaired; cardiac lipase was significantly decreased and adipose tissue increased in the fed state. Cardiac lipase failed to increase normally after a three day fast. In a clinical study, renal transplant patients were found to have a high frequency of hyperlipidemia involving an accumulation of both cholesterol and triglyceride-rich lipoprotein, and an abnormality in basal insulin secretion like dialysis patients.

PB-234 751/6GA PC$5.00/MF$2.25
National Academy of Engineering, Washington, D.C. Committee on the Interplay of Engineering with Biology and Medicine.
SELECTED RESEARCH, DEVELOPMENT AND ORGANIZATIONAL NEEDS OF THE HEARING IMPAIRED.
Final rept.
May 73, 36p NAE-CIEBM-74-7
Contract PH-43-64-44

Descriptors: *Hearing aids, *Research management, Medical research, Auditory defects, Auditory perception, Detectors, Senses, Evaluation, Research projects, Speech, Medical equipment.

The document itemizes research and development needs and outlines the components of a coordinated program of research and development in the field of sensory aids with the purpose of stimulating the development of individual research proposals. A general assessment of the present status of the field is offered and then a list of 11 specific projects that warrant immediate attention. Stress is placed on determining the best means of using and deploying existing sensory aids, on methods of device and system evaluation, and on determing optimal methods of training. Speech is also given emphasis. A final summary provides short abstracts and classifies the listed projects into those of an organizational nature and those involving sensory aid research and development. Features cited references and other pertinent source documents listing.

PB-234 921/5GA PC$3.25/MF$2.25
California Univ., Berkeley. Dept. of Mechanical Engineering.
SPECIAL VEHICLES FOR THE SEVERELY DISABLED. UNIVERSAL POWERED WHEELCHAIR FOR THE QUADRIPLEGIC.
Final rept.,
Don M. Cunningham. Mar 72, 47p SRS-RD-12-55267-002
Grants SRS-RD-2615-G, SRS-RD-12-55267

Descriptors: *Wheel chairs, *Paralysis, Automobiles, Bioengineering, Models, Medical equipment, Nervous system disorders, Reviews, Design.
Identifiers: *Quadriplegia.

The report describes a project (1968-1972) to increase the independent mobility of medium low-level quadriplegics around the home, the place of occupation, and on the highway which found that a combination of wheelchair and automobile would best suit the purposes; however, by the end of the project, only five major parts had been fully planned and built into a prototype, accompanied by plans and suggestions for completing the entire model.

PB-234 923/1GA PC$3.75/MF$2.25
Illinois Dept. of Children and Family Services, Springfield.
EVALUATION OF THE BINAURAL SENSOR IN REHABILITATION OF THE BLIND.
Final rept.,
Thomas J. Murphy, Nancy C. Johnson, Sue E. Stealey, and Kenji Ima. Jan 73, 62p SRS-14-55186-001
Grant SRS-14-55186

Descriptors: *Blindness, *Rehabilitation, *Binaural hearing, Medical equipment, Optical equipment, Detectors, Senses, Mobility, Visual aids, Auditory perception, Ultrasonic frequencies, Education.

A project to determine the effectiveness of the ultrasonic binaural sensor as an aid to the travel of the blind found that there was little difference in mobility when using the aid except for the higher rate of object avoidance, that the aid was a valuable tool in orientation to a new environment and in mobility training, and that the attitudes of the clients toward the aid affected their use of the aid. The project involved the instruction and training of the clients in the use of the ultrasonic binaural sensor.

PB-234 924/9GA PC$4.50/MF$2.25
Stanford Research Inst., Menlo Park, Calif.
OPTICAL-TO-TACTILE IMAGE CONVERSION FOR THE BLIND.
Final rept. 17 May 70-30 Jun 72,
James A. Baer, and John W. Hill. Jun 72, 115p SRS-15-55296-001
Grant SRS-70-42, SRS-14-55296

Descriptors: *Blindness, *Rehabilitation, Bioengineering, Evaluation, Optical equipment, Medical equipment, Detectors, Perception, Touch, Senses.
Identifiers: *OPTACON(Optical to Tactile Image Conversion Device).

A project (1970-1972) to develop and evaluate a reading aid for blind people, the Optical-To-Tactile Image-Conversion Device (OPTACON), developed a 150-page training manual, a two finger OPTACON, and four accessory devices increasing OPTACON utility. It found that the fingertip was the most effective area to use for reading with the OPTACON. Experiments with the single-

finger and two finger OPTACON had inconclusive results concerning improved reading speed.

PB-234 927/2GA PC$3.25/MF$2.25
Southern Research Inst., Birmingham, Ala.
ACTIVATED CARBON FIBERS FOR ARTIFICIAL KIDNEY DEVICES.
Annual rept. Aug 73-Aug 74,
Thomas A. Davis. 6 Aug 74, 33p SORI-EAS-74-224 AK-3-72-2208
Contract N01-AM-2-2208
See also PB-229 925.

Descriptors: *Activated carbon, *Artificial kidneys, *Carbon fibers, Adsorption, Urea, Uric acid, Urea, In vivo analysis, Dogs, Laboratory animals, Fiber composites, Hydroxyethyl cellulose.
Identifiers: Creatinine, Hemoperfusion, Carbon fiber reinforced plastics.

Filaments made by wet-spinning a dispersion of powdered activated carbon in hydroxyethylcellulose solution have 70% (w/w, dry basis) of the absorbent carbon encapsulated in a water-swollen cellulosic binder that is permeable to solutes with molecular weights at least as high as 800. These activated carbon fibers are wound onto a perforated spindle and sealed in a 3-in.- diameter x 6-in.-long ribbed cylinder to form a hemoperfusion cartridge. In vivo clearances of creatinine as high as 105 ml/min were achieved when dog's blood was pumped through the devide at 150 ml/min for three hr. Minimal blood damage and carbon emboli were detected. A disposable hemoperfusion cartridge that retails for about $20 appears to be a feasible supplement or replacement for hemodialysis in the treatment of uremia.

PB-235 138/5GA PC$4.75/MF$2.25
Franklin Inst. Research Labs., Philadelphia, Pa.
DEVELOPMENT OF A STAIR-CLIMBING WHEELCHAIR.
Final rept.,
Martin Regina, Richard C. Quinn, and Thomas C. Stilwell. May 72, 144p FIRL-F-C2564 SRS-12-55116-002
Grant SRS-12-55116

Descriptors: *Wheel chairs, *Medical equipment, Design, Bioengineering, Human factors engineering, Marketing.

A project (1969-1972) resulted in construction of a wheelchair which could climb steps and still retain all desirable features of existing ordinary wheelchairs. Two prototypes were designed, each able to climb steps and to perform daily functions; the second corrected some minor deficiencies of the first prototype. The project involved a literature survey, marketing surveys, and studies to determine how the wheelchair could be the most suitable to the needs of its users.

6M. Microbiology:

AD-783 573/9GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
CONCERNING INACTIVATION OF VIRUSES IN AIR.
R. A. Dmitriev. 14 Jun 74, 14p Rept no. FTD-MT-24-727-74
Edited machine trans. of Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii (USSR) n4 p21-25 1973, by Michael L. Seidel.

Descriptors: *Virus diseases, *Viruses, *Disinfection, *Hygiene, Humidity, Infectious diseases, Respiratory system, USSR, Translations, Air, Enteroviruses, Adenoviruses, Newcastle disease virus, Parainfluenza virus.

In closed living and community rooms, many viruses can long retain infectious activity in air. The more stable under these conditions are the adenoviruses, the enteroviruses and the Newcastle's disease virus, but the parainfluenza viruses and respiratory-syncytial virus are inactivated sufficiently rapidly. The relative humidity has a significant effect on the degree of virus inactivation in the air.

AD-783 596/0GA Reprint
School of Aerospace Medicine Brooks AFB Tex
EXOGENOUS METHIONINE REQUIREMENTS OF 'PSEUDOMONAS MALTOPHILIA',
Robert V. Marraro, James L. Mitchell, Louis E. Blouse, and Harstry J. Dupuy. 1974, 5p Rept no. SAM-TR-72-467
Availability: Pub. in Jnl. of American Medical Technology, v36 p239-240 Jul/Aug 74.

Descriptors: *Pseudomonas, *Methionine, Growth(Physiology), Bacteria, Amino acids, Cultures(Biology), Biochemistry, Physiology.
Identifiers: Pseudomonas maltophilia.

The exogenous methionine requirements of ten pedigree and 30 laboratory strains of Pseudomonas maltophilia were examined. Amino acid analyses of a commercially available medium presented evidence that exogenous methionine was not required for growth. (Author)

BNL-18885 PC$4.25/MF$2.25
Brookhaven National Lab., Upton, N.Y.
T7 GENE FUNCTION REQUIRED FOR SHUTOFF OF HOST AND EARLY T7 TRANSCRIPTION.
L. B. Rothman-Denes, S. Muthukrishnan, R. Haselkorn, and F. W. Studier. 1973, 21p CONF-730360-1

Descriptors: (*Genes, *Biochemical reaction kinetics), (*Rna, *Biosynthesis), Bacteriophages, Chromosomes, Dna, Escherichia coli, Ligases, Polymerases.

For abstract, see NSA 30 04, number 12109.

CONF-740444-2 PC$4.00/MF$2.25
Texas Medical Center, Houston.
GENETIC STUDIES OF BACTERIAL ISOZYMES.
J. N. Baptist, D. Thomas, M. A. Butler, and T. S. Matney. 1973, 16p
Contract AT(40-1)-4024

Descriptors: (*Escherichia coli, *Genes), (*Salmonella typhimurium, Genes), Cell constituents, Genetics, Isoenzymes.

For abstract, see NSA 30 04, number 12112.

COO-2384-1 PC$4.00/MF$2.25
Wayne State Univ., Detroit, Mich. Dept. of Biology.
STUDIES OF THE GENETIC MATERIAL OF SOME RNA VIRUSES. PROGRESS REPORT, AUGUST 1, 1973--JULY 31, 1974.
A. Siegel. 1974, 7p
Contract AT(11-1)-2384

Descriptors: (*Viruses, *Genetics), Biosynthesis, Nucleotides, Proteins, Rna, Tobacco mosaic virus.

For abstract, see NSA 30 04, number 12124.

COO-3516-4 PC$4.00/MF$2.25
Rutgers--the State Univ., New Brunswick, N.J.
MITOCHONDRIAL GENOTYPES AND PHENOTYPES IN YEAST. TECHNICAL ANNUAL PROGRESS REPORT, SEPTEMBER 1, 1973--AUGUST 31, 1974.
W. Rouslin. 1974, 5p
Contract AT(11-1)-3516

Descriptors: Genetic variability, Mitochondria, Oxygen, Proteins, Yeasts.

For abstract, see NSA 30 04, number 12133.

COO-3516-5 PC$4.00/MF$2.25
Rutgers--the State Univ., New Brunswick, N.J. Dept. of Biological Sciences.
EVIDENCE OF INVOLVEMENT OF MITOCHONDRIAL POLYSOMES AND MESSENGER RNA IN SYNTHESIS OF ORGANELLE PROTEINS.
C. S. Cooper, and C. J. Avers. 1973, 8p CONF-730691-1

Descriptors: (*Proteins, *Biosynthesis), Messenger-rna, Mitochondria, Yeasts.

For abstract, see NSA 30 04, number 12134.

COO-3565-3 PC$5.00/MF$2.25
Woods Hole Oceanographic Institution, Mass.
MARINE MICROBIOLOGY. PROGRESS REPORT, 1973--1974.
S. W. Watson. 1974, 40p
Contract AT(11-1)-3565

Descriptors: (*Bacteria, *Distribution), (*Nutrients, *Mineralization), Atp, Lipopolysaccharides, Seas.

For abstract, see NSA 30 05, number 14729.

LA-5556-PR PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
SEROLOGIC TEST SYSTEMS DEVELOPMENT. SEMIANNUAL REPORT, JULY--DECEMBER 1973.
G. C. Saunders, E. H. Clinard, J. C. Forslund, M. L. Bartlett, and D. M. Holm. Apr 74, 24p
Contract W-7405-eng-36

Descriptors: (*Trichinosis, *Diagnosis), (*Swine, Trichinosis), Antigen-antibody reactions, Diagnostic techniques.

For abstract, see NSA 30 04, number 12135.

LA-5565-MS PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
APPLICATION OF CELL ANALYSIS AND SORTING TECHNIQUES TO DISEASE DETECTION (RAPID DIFFERENTIAL DIAGNOSIS OF NEWCASTLE DISEASE VIRUS).
L. S. Cram. Apr 74, 6p
Contract W-7405-eng-36

Descriptors: (*Chickens, Newcastle disease), (*Newcastle disease, *Diagnosis), Diagnostic techniques, Viruses.

For abstract, see NSA 30 04, number 12136.

ORO-3941-21 PC$4.00/MF$2.25
Duke Univ., Durham, N.C. Dept. of Biochemistry.
MECHANISMS OF RECOMBINATION AND FUNCTION OF DNA IN BACTERIA. PROGRESS REPORT, MAY 11, 1973--MAY 8, 1974.
W. R. Guild. 5p
Contract AT(40-1)-3941

Descriptors: (*Dna, *Biological repair), (*Bacteria, *Dna replication), Biochemical reaction kinetics, Genetics, Strand breaks.

For abstract, see NSA 30 04, number 12140.

PATENT-3 735 004 Not available NTIS
Department of the Army Washington D C
HEPATITIS VACCINE.
Patent,
Saul Krugman, Joan P. Giles, and Jack Hammond. Filed 1 Nov 71, patented 22 May 73, 5p Rept nos. PAT-APPL-194 439,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Hepatitis, *Vaccines, *Patents, Hepatitis viruses, Preparation, Humans, Bioassay, Dosage, Immunity.
Identifiers: PAT-CL-424-89.

The invention relates to preparation and administration to humans of a viral hepatitis, Type B vaccine.

PB-234 207/9GA PC$4.25/MF$2.25
North Carolina Univ., Chapel Hill. School of Medicine.
DETECTION OF CYTOMEGALOVIRUS BY NUCLEIC ACID HYBRIDIZATION TECHNIQUES.
Annual rept. 1 Jun 73-31 May 74,
Joseph S. Pagano, and Eng-Shang Huang. Jun 74, 21p NIH/NHLI-72-2911-B
Contract PHS-72-2911-B
See also PB-226 887.

Descriptors: *Herpes simplex virus, *Nucleic acid, *Hybridization, Microbiology, Immunology, Viruses, Infectious diseases, Bone marrow, Humans, Congenital abnormalities, Detection, Serodiagnosis, Surgical transplantation, Deoxyribonucleic acids, In vitro analysis, Ribonucleic acids.
Identifiers: *Cytomegalovirus, Salivary gland virus.

Nucleic acid hybridization techniques, RNA-DNA membrane hybridization, DNA-DNA renaturation kinetics analysis (Cot analysis) and in situ 3H cRNA-DNA cytohybridization were developed and successfully applied to detection of human cytomegalovirus (CMV) genome in the specimens of human blood cell, lung, kidney, brain, spleen, tissue and human semen obtained from bone-marrow transplantation, postperfusion, congenital defective patients. The CMV DNA can be readily detected by cRNA-DNA membrane hybridization and by Cot analysis in blood samples and some other tissue, e.g., lung, brain and spleen which did not disclose infectious cytomegalovirus by conventional isolation attempt. By in situ 3H cRNA-DNA cytohybridization technique the heavy concentration of virus or viral DNA was found in the spermatozoa from human semen and found in a particular cell type, cuboidal cells of the collecting tubules, of kidney tissue obtained from a congenital defected baby.

TT-73-54073 PC$3.00
Department of Agriculture, Washington, D.C.
BACTERIOLOGICAL DIAGNOSTICS OF THE BEE FOUL BROOD (DIAGNOSTYKA BAKTERIOLOGICZNA ZGNILCA ZLOSLIWEGO PSZCZOL),
Z. Glinski. 1974, 10p
Trans. of Medycyna Weterynaryjna (Poland) v24 n6 p346-349 1968, by M. Jurecki. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Bacillus, *Bees, Serology, Culture media, Bacteria, Infectious diseases, Poland, Translations, Diagnosis, Biochemistry, Morphology, Veterinary medicine, Larvae.

American foul brood is one of the most frequently occurring infectious diseases of honey brood in Poland. It is caused by Bacillus larvae White. Under natural conditions the bacteria is pathogenic for brood (principally 5-6 day old) in which appear typical pathological changes. Morphological, biochemical and cultural properties of Bac. larvae, however, are not typical enough to warrant distinguishing this germ from other bacilli repeatedly found in sick larvae.

6O. Pharmacology

AD-783 831/1GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
DETERMINATION OF ATROPIN SULFATE IN POWDER AND IN 0.1% SOLUTION FOR INJECTION,
S. I. Uspenskaya, and A. A. Semenycheva. 26 Oct 73, 8p Rept no. FSTC-HT-23-73-74
Trans. of Farmatsiya (USSR) v21 n5 p30-32 1972.

Descriptors: *Atropine, *Drugs, Injections(Medicine), Pharmacology, Chemical analysis, USSR, Translations, Powders.
Identifiers: Tungstophosphoric acid.

Results of experiments in phototurbidimetric titration of atropin sulfate, using phosphotungstic acid as the titrant and 95% ethanol to improve the reproducibility of results, are presented. Results are determined by absorption at 490nm and plotting the titration curves, on which a sharp bend is seen at the end point. Relative error of determination is plus or minus 1.57%. (Author)

AD-783 925/1GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
EXPERIMENTAL USE OF ANTIBIOTIC-IMMUNODEPRESSANTS,
V. A. Ado, V. G. Akimov, L. A. Goryanchkina, A. A. Podkolzin, and S. F. Maksimenko. 22 Jul 74, 14p Rept no. FTD-HT-23-2074-74
Edited trans. of Antibiotiki (USSR) v18 n1 p26-29 Jan 73, by Charles T. Ostertag, Jr.

Descriptors: *Antibiotics, *Immunology, Toxicology, Pharmacology, Guinea pigs, Experimental data, USSR, Translations, Dosage, Laboratory animals, Hamsters, Allergic diseases.
Identifiers: Dactinomycin, Bruneomycin, Rubomycin, Immunosuppresive agents, Allergens, Benzene/chloro-dimitro.

The antibiotic-immunodepressants (dactinomycin, bruenomycin, and rubomycin) in the doses used on the guinea pigs and hamsters selected for reproduction of the allergic reactions exhibited an expressed toxic effect. Dactinomycin in doses to 30 micrograms/kg exerted an expressed immunodepressant effect. Bruneomycin in doses of 0.75 mg/kg significantly inhibited the development of allergic contact dermatitis to 2,4-dinitro-chlorobenzene, but did not protect the animals from anaphylactic shock. Rubomycin in doses of 30 mg/kg did not inhibit allergic reactions of the immediate and delayed types.

6P. Physiology

AD-783 502/8GA Reprint
Army Medical Research Inst of Infectious Diseases Frederick Md
ORAL AND INTRADUODENAL GLUCOSE AND FRUCTOSE LOADING AT VARIOUS DOSES,
H. Foerster, and H. Mehnert. 1967, 9p
Availability: Pub. in Verhandlungen der Deutschen Gesellschaft fuer Innere Medizin, v73 p778-781 1967.

Descriptors: *Diabetes, *Hexoses, *Stomach, Glucose, Fructoses, Dosage, Gastrointestinal system, Rats, Laboratory animals, Experimental data, Clinical medicine, Intestines, Metabolism, Absorption(Biological).
Identifiers: Diabetes mellitus.

Oral glucose loading has been used as a valuable supplementary method for the diagnosis of diabetes mellitus for decades. However, in recent years many authors stressed the intravenous glucose-tolerance test. Some people may hold the view that several components are tested when glucose is administered orally. The level of blood glucose may be affected by the following factors: by stomach emptying, by resorption from the intestine, by insulin secretion or elimination of the glucose from the blood. Animal experiments show that in the case of oral glucose application the resorption is limited by stomach emptying.

AD-783 817/0GA PC$6.50/MF$2.25
Naval Postgraduate School Monterey Calif
THE INFLUENCE OF BIORHYTHMIC CRITICALITY ON AIRCRAFT MISHAPS.
Master's thesis,
Dietmar Sacher. Sep 74, 68p

Descriptors: *Aviation accidents, *Circadian rhythms, Fatigue(Physiology), Theses, Mathematical models, Statistical analysis, Pilots, Cycles, Physiology, Aviation safety, Naval aircraft, Naval operations, Rest.
Identifiers: Work rest cycles.

The investigation dealt with the problem of biorhythmic criticality and its influence on human error and accidents, based on data from 4346 naval aircraft mishaps in the Fiscal Years 1968-1973. Observed occurrences of mishaps were computed under different aspects and compared against expected occurrences, obtained from a mathematical model. The findings of the study supported the relativity-idea in the theory of biorhythms: critical states of the three biorhythmic cycles have different effects on groups of people with different characteristics. For pilots, the study revealed no significant influence from biorhythms by straightforward application of critical days, as observed in previous research. (Modified author abstract)

AD-783 854/3GA Reprint
Milwaukee County General Hospital Wis
PERIOD ANALYSIS OF EEG SIGNALS DURING SLEEP AND POST-TRAUMATIC COMA.
Doctoral thesis,
Charles S. Lessard, Anthony Sances, Jr., and Sanford J. Larson. 1974, 8p AMRL-TR-74-50
Contract DADA17-71-C-1093
Availability: Pub. in Aerospace Medicine, v45 n6 p664-668 Jun 74.

Descriptors: *Electroencephalography, *Sleep, Patients, Brain, Pathology, Physiology, Electrophysiology.
Identifiers: Sleep stages, *Coma.

The purpose of this investigation was to study electroencephalographic (EEG) signal characteristics for classification of sleep stages and identification of EEG patterns for possible prediction in post-traumatic coma. Nocturnal electroencephalographic recordings were collected from normal sleep subjects and closed head injury comatose and drug ingested comatose patients. Ten coma patients were studied. Six patients who did not display cycile EEG patterns died. The remaining four patients, who had cyclic EEG patterns, survived. For the surviving patients, scattergrams of delta versus total zero crossings per epoch showed regression coefficients similar to the control group. Conclusions reached from the study are: that visual scoring of sleep into stages may not be essential since a display of the cyclic EEG patterns appears sufficient for prognosis of coma and, that the scattergrams of delta versus total zero crossings may prove useful in trend analysis of the cerebral state. (Modified author abstract)

AD-783 929/3GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
ACTIVITY OF HISTAMINE-ACTIVATING ENZYMES IN THE KIDNEYS OF DOGS IN ALLERGIC REACTIONS OF THE IMMEDIATE TYPE,
V. I. Pytskii, and S. M. Orlov. 22 Jul 74, 12p Rept no. FTD-HT-23-2073-74
Edited trans. of Patologicheskaya Fiziologiya i Eksperimentalnaya Terapiya (USSR) n4 p29-32 1972, by Marilyn Olaechea.

Descriptors: *Allergic diseases, *Histamine, Immunology, Enzymes, Kidneys, Dogs, USSR, Translations, Metabolism, Anaphylaxis, Shock(Pathology).

Dog kidneys were perfused in vitro. These organs were found to almost completely metabolize histamine. When normal horse serum was introduced into the kidneys of intact dogs histamine concentration in the outflowing perfusate showed some increase; when it was administered into the kidneys of sensitized dogs histamine concentration was found to diminish in the outflowing perfusate in 73% of cases, this pointing to increase in the activity of histamine-activating enzymes in the process of anaphylaxic development.

COM-74-50713/8GA Not available NTIS
National Bureau of Standards, Washington, D.C.
CONTRAST-DIFFERENCE THRESHOLDS WITH SINUSOIDAL GRATINGS.
Final rept.,
Y. Kohayakawa. Apr 72, 4p
Pub. in Jnl. of the Optical Society of America, v62 n4 p584-587 Apr 72.

Descriptors: *Visual perception, Thresholds(Perception), Contrast.

Two halves of a sinusoidally modulated transparency were projected on a diffusing surface. The contrast C of one half of the field was changed by defocusing until a definite difference of contrast, delta C, was perceived. The contrast of either half of the field could be changed without changing the mean luminance. A plot of delta C/C against D declines monotonically with increasing contrast. On the other hand, delta C against C has a maximum at an intermediate contrast. The constrast difference delta C can be interpreted as relative luminance difference delta L/L, to which the Weber law applies. A function relating subjective to objective contrast was obtained. The relation between modulation transfer function (MTF) with constant input and constant output is discussed.

COO-2270-2 PC$5.00/MF$2.25
Wisconsin Univ., Madison Dept. of Zoology.
ENERGY BUDGETS OF ANIMALS: BEHAVIORAL AND ECOLOGICAL IMPLICATIONS.
May 74, 37p
Contract AT(11-1)-2270

Descriptors: (*Animals, *Energy balance), (*Population dynamics, Energy balance), Behavior, Biological models, Climates, Deserts, Frogs, Lizards, Meteorology, Snakes.

For abstract, see NSA 30 04, number 12121.

COO-3139-11 PC$7.50/MF$2.25
Connecticut Univ., Storrs Dept. of Animal Genetics.
PROTEINS IN GROWTH REGULATION DURING EARLY DEVELOPMENT OF THE CHICK EMBRYO.
N. W. Klein. 1974, 89p
Contract AT(11-1)-3139

Descriptors: (*Proteins, *Biological effects), (*Chickens, *Embryos), Animal growth, Dna, Nutrition.

For abstract, see NSA 30 05, number 14725.

COO-3139-12 PC$4.00/MF$2.25
Connecticut Univ., Storrs Dept. of Animal Genetics.
PROTEINS IN GROWTH REGULATION DURING EARLY DEVELOPMENT OF THE CHICK EMBRYO. PROGRESS REPORT, MAY 1973–MAY 1974.
N. W. Klein. 1974, 14p
Contract AT(11-1)-3139

Descriptors: (*Chickens, Embryos), (*Proteins, *Metabolism), (*Embryos, *Growth), Age dependence, Animal growth, Inhibition, Stimulation.

For abstract, see NSA 30 05, number 14726.

COO-3167-95 PC$4.00/MF$2.25
New York State Veterinary Coll., Ithaca Dept. of Physical Biology.
MECHANISM OF CALCIUM ABSORPTION AND TRANSPORT: THE INVOLVEMENT OF THE VITAMIN D-INDUCED CALCIUM-BINDING PROTEIN.
A. N. Taylor. 1973, 11p CONF-730229-1

Descriptors: (*Calcium, *Intestinal absorption), Biochemical reaction kinetics, Chemical bonds, Chickens, Proteins, Vitamin d.

For abstract, see NSA 30 04, number 12127.

LA-UR-74-630 PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
AUTOMATIC IDENTIFICATION AND PHYSIOLOGICAL MONITORING.
H. A. Baldwin, S. W. Depp, A. R. Koelle, and R. W. Freyman. 1973, 8p CONF-740618-1
Contract W-7405-eng-36

Descriptors: (*Proteins, *Biosynthesis), (*Food, *Planning), (*Domestic animals, *Biological stress), Agriculture, Automation, Data acquisition systems, Economics, Human populations.

For abstract, see NSA 30 04, number 12137.

PB-235 181/5GA PC$4.75/MF$2.25
Moss Rehabilitation Hospital, Philadelphia, Pa.
NEUROMOTOR CONTROL SYSTEMS. A STUDY OF PHYSIOLOGICAL AND THEORETICAL CONCEPTS LEADING TO THERAPEUTIC APPLICATION.
Final rept.,
Richard Herman, Frank H. Krusen, A. Willem Monster, and Alfred Gronner. Dec 71, 147p SRS-23-55115-001
Grant SRS-23-55115

Descriptors: *Motor reactions, *Nervous system disorders, Physiology, Pathophysiology, Musculoskeletal disorders, Therapy, Pharmacology, Paralysis.
Identifiers: Neurophysiology.

Research (1968-1971) determined functional and therapeutic implications derived from investigations of physiological mechanisms involved in the control of skilled voluntary movement and muscle tone. The role of specific sensory modalities and of integrative pathways and subsystems serving both position and force were emphasized. Clinical and physiological analyses of the efficacy of certain muscle relaxant drugs were done in hemiplegic and paraplegic patients. An extensive bibliography and literature review is included.

6Q. Protective Equipment

LA-5574-PR PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
RESPIRATOR STUDIES FOR THE AEC DIVISION OF OPERATIONAL SAFETY. PROGRESS REPORT, JULY 1–DECEMBER 31, 1973.
B. J. Held, P. Lowry, and D. Bevis. Apr 74, 9p
Contract W-7405-eng-36

Descriptors: (*Respirators, *Research programs), Safety.

For abstract, see NSA 30 04, number 09474.

PB-234 660/9GA PC$7.00/MF$2.25
Kansas State Univ., Manhattan. Inst. for Systems Design and Optimization.
COMPUTER SIMULATION OF OPTIMAL CONTROL OF AN INTEGRATED HUMAN THERMAL SYSTEM BY RESPONSE SURFACE METHODOLOGY,
C. L. Hwang, L. T. Fan, S. A. Konz, and H. N. Ozarkar. Aug 74, 78p ISDO-59
Grant NSF-GK-41206

Descriptors: *Cooling systems, *Protective clothing, Temperature control, Computerized simulation, Mathematical models, Experimental data, Heat stress, Metabolism.
Identifiers: *Water cooled suits, *Personal cooling systems, Thermal comfort.

The optimal policy for controlling an integrated human thermal system (the body and a water-cooled garment on the head and torso) was determined by the response surface methodology. This methodology finds empirically and systematically the optimal control policy; this report, however, presents a scheme based on the method for carrying out a prior computer simulation of the experimental search for the optimum control. The objective of the control was to minimize the control effort for operating the external thermal regulation device while maintaining a state of thermal comfort (thermoneutrality).

6R. Radiobiology

AD-783 772/7GA PC$3.00/MF$2.25
School of Aerospace Medicine Brooks AFB Tex
AIRCREW VULNERABILITY IN NUCLEAR ENCOUNTERS.
Aeromedical review,
Richard A. Albanese, and John E. Pickering. Jul 74, 23p Rept nos. SAM-TR-74-18, SAM-Review-5-74

Descriptors: *Nuclear radiation, *Radiobiology, *Radiation effects, *Health physics, Flight crews, Dosage, Lethality, Nuclear warfare, Dose rate, Nuclear weapons, Aerospace medicine.

A computational method (algorithm) is described which estimates probable mission outcome resulting from crew exposure to prompt neutron gamma radiation and/or residual fallout radiation. The threat scenario presupposes that:the crew has encountered one or more nuclear weapons; both aircraft and crew have survived the blast and thermal insults; and the aircraft is undegraded by the radiation (aircraft is survivable). Thus one is examining decreases in mission performance based upon crew irradiation only. (Author)

AD-783 779/2GA PC$3.25/MF$2.25
Air Force Academy Colo
FOIL ACTIVATION ANALYSIS AND THERMOLUMINESCENT DOSIMETRY ON SKYLAB II.
Final rept. Apr 73-Jul 74,
Louis F. Wailly, John W. Watters, and Peter B. Carter. Jul 74, 27p Rept no. USAFA-TR-74-11

Descriptors: *Space environments, *Radiation hazards, *Dosimetry, Manned spacecraft, Foils(Materials), Activation, Radiation shielding, Lithium fluorides, Manganese, Calcium fluorides.
Identifiers: *Thermoluminescent dosimetry, Skylab program.

The Skylab II Command Module was equipped with passive dosimeter located at five selected stations within the spacecraft to monitor radiation levels accumulated during the 28 day space mission. The passive sensors consisted of an array of thermoluminescent devices (TLD) ionization chambers, and activation foils. The thermoluminescent units chosen were the EG and G Corporation evaculated glass container type. Both lithium fluoride and manganese activated calcium fluoride were selected for use in the Skylab missions. (Modified author abstract)

AD-783 794/1GA PC$3.25/MF$2.25
Air Force Academy Colo
RADIATION INDUCED CHANGES IN INTRACRANIAL PRESSURE AND ARTERIAL BLOOD PRESSURE.
Final rept.,
John W. Watters, Louis F. Wailly, and Peter B. Carter. Jun 74, 27p Rept no. USAFA-TR-74-13

Descriptors: *Radiation effects, *Hypotension, *Brain, Gamma rays, Pressure, Cerebrospinal fluid, Monkeys, Experimental data, Radiation dosage.

Twenty Macaca mulatta monkeys were exposed to cobalt-60 gamma radiation at the rate of 1000 rad/minute for mid-thoracic doses of approximately 1307 rad to 10 monkeys and 2244 rad to the remaining 10 animals. The average intracranial pressure increased in both groups following exposure, but the response observed in the low-dose group was not so great as that elicited in the monkeys that were exposed to higher levels of irradiation. Hypotension developed in the majority of animals postirradiation, and the degree of response was greatest in the high-dose group of monkeys. (Author)

AEC-tr-7457 PC$13.60/MF$2.25
BIOLOGICAL EFFECTS OF RADIATION FROM EXTERNAL AND INTERNAL SOURCES.
Yu. I. Moskalev, and V. S. Kalistratova. 1972, 515p
Translation of Biologicheskoye deystviye vneshnikh i vnutrennikh istochnikov radiatsii, Moscow, Meditsina, 1972.

Descriptors: (*Biological radiation effects, *External irradiation), (*Mammals, Biological radiation effects), Internal irradiation, Leading abstract.

For abstract, see NSA 30 04, number 09793.

AECL-4668 PC$5.50/MF$2.25
Atomic Energy of Canada Ltd., Pinawa, Manitoba. Whiteshell Nuclear Research Establishment.
ECOLOGY OF THE FIELD IRRADIATOR-GAMMA AREA. III. REVISIONS TO BOTANICAL METHODS AND VEGETATION SAMPLING PROCEDURES (AECL--4135).
J. R. Dugle, and D. H. Thibault. Feb 74, 47p
U.S. Sales Only.

Descriptors: (*Plants, *Sampling), Diagrams, Gamma radiation, Irradiation, Irradiation procedures, Maps, Radiation effects.

For abstract, see NSA 30 04, number 09760.

AERE-R-7728 PC$4.00/MF$2.25
UKAEA Research Group, Harwell. Atomic Energy Research Establishment.
NEUTRON CAPTURE PROBABILITY FOR SODIUM ACTIVATION IN MAN PHANTOMS.
H. J. Delafield. Apr 74, 15p
U.S. Sales Only.

Descriptors: (*Phantoms, *Radioactivity), (*Sodium, Neutron reactions), (*Neutron reactions, *Capture), Fast neutrons, Man, Neutron dosimetry, Personnel dosimetry, Probability, Radiation doses, Thermal neutrons.

For abstract, see NSA 30 04, number 09944.

ANL-8070 PC$7.60/MF$2.25
Argonne National Lab., Ill.
DIVISION OF BIOLOGICAL AND MEDICAL RESEARCH ANNUAL REPORT, 1973.
Dec 73, 246p
Contract W-31-109-eng-38

Descriptors: (*Radiobiology, *Research programs), Anl, Leading abstract.

For abstract, see NSA 30 05, number 12845.

BARC-739 PC$10.00/MF$2.25
Bhabha Atomic Research Centre, Bombay (India).
DIVISION OF RADIOLOGICAL PROTECTION ANNUAL PROGRESS REPORT FOR 1973.
P. Gangadharan, U. Madhvanath, and U. C. Mishra. 1974, 139p
U.S. Sales Only.

Descriptors: (*India, *Radiation protection), (*Personnel, Radiation protection), (*Patients, Radiation protection), (*Gamma sources, *Calibration), Agriculture, Biomedical radiography, Design, Diagnostic techniques, Dosemeters, Education, Industry, Medical personnel, Radiation monitoring, Radiotherapy, Research programs, Standards.

For abstract, see NSA 30 04, number 09794.

BNL-18802 PC$4.25/MF$2.25
Brookhaven National Lab., Upton, N.Y.
HOW RADIOACTIVE ARE YOU.
A. P. Hull. 1973, 21p CONF-740450-1

Descriptors: (*Environment, *Radioactivity), (*Nuclear power plants, *Radiation hazards), Carcinogenesis, Contamination, Cost benefit analysis, Dose-response relationships, Fallout, Fossil-fuel power plants, Genetic radiation effects, Human populations, Maximum permissible exposure, Nuclear weapons, Testing.

For abstract, see NSA 30 04, number 09986.

BNL-18881 PC$5.25/MF$2.25
Brookhaven National Lab., Upton, N.Y.
LYMPHOCYTE REPOPULATION AND RESTORATION OF CELL MEDIATED IMMUNITY FOLLOWING RADIATION: WHOLE BODY AND LOCALIZED IRRADIATION.
E. P. Cronkite, A. D. Chanana, D. D. Joel, and J. Laissue. 1974, 42p CONF-740331-2

Descriptors: (*Lymphocytes, *Biological radiation effects), (*Immune reactions, Biological radiation effects), (*Lymphatic system, Biological radiation effects), Antigens, Blood, Blood formation, Body fluids, Bone marrow, Cell proliferation, Dose-response relationships, Extracorporeal irradiation, Immunosuppression, Kidneys, Local irradiation, Lymph, Reviews, Shielding, Skin, Stem cells, Thymus, Transplants, Whole-body irradiation.

For abstract, see NSA 30 04, number 09863.

BNWL-SA-5013 PC$4.00/MF$2.25
Battelle Pacific Northwest Labs., Richland, Wash.
IMPACT OF RADIATION ON MAN AND HIS ENVIRONMENT.
D. A. Waite. May 74, 6p CONF-740544-1

Descriptors: (*Human populations, *Radiation doses), (*Nuclear power plants, *Radiation hazards), (*Nuclear facilities, Radiation hazards), Accelerators, Biological radiation effects, Biomedical radiography, Cosmic radiation, Cost benefit analysis, Dose-response relationships, Environment, Fission products, Hapo, Ionizing radiations, Irradiation, Man, Natural radioactivity, Radiation sources, Radioactive waste management, Radioactivity.

For abstract, see NSA 30 05, number 12912.

BNWL-SA-5018 PC$4.25/MF$2.25
Battelle Pacific Northwest Labs., Richland, Wash.
CONSIDERATIONS IN ASSESSING THE POTENTIAL HARM TO POPULATIONS EXPOSED TO LOW LEVELS OF PLUTONIUM IN AIR.
W. J. Bair. 1974, 21p CONF-740529-3, SM-184/14
Contract AT(45-1)-1830

Descriptors: (*Plutonium 238, *Tissue distribution), (*Plutonium 239, Tissue distribution), (*Neoplasms, *Radioinduction), (*Lungs, *Biological radiation effects), Carcinogenesis, Dose-response relationships, Health hazards, Human populations, Inhalation, Internal irradiation, Mammals, Nuclear power plants, Plutonium compounds, Radiation doses, Radioactive aerosols, Radioactive waste management, Radionuclide kinetics, Retention, Toxicity.

For abstract, see NSA 30 05, number 13014.

BNWL-tr-120 PC$4.00/MF$2.25
Battelle Pacific Northwest Labs., Richland, Wash.
ACTION THRESHOLDS AND HEALTH PHYSICS (RADIATION PROTECTION).
M. Delpla, and S. Vignes. 1974, 15p CONF-740529-5
Translation of paper SM-184/21.

Descriptors: (*Human populations, *Radiation protection), (*Personnel, Radiation protection), (*Icrp, *Recommendations), (*Nuclear power plants, *Health hazards), Environment, Man, Maximum permissible dose, Radiation doses, Radiation hazards, Safety standards, Standards.

For abstract, see NSA 30 05, number 12913.

BNWL-tr-123 PC$4.00/MF$2.25
Battelle Pacific Northwest Labs., Richland, Wash.
INDIVIDUAL AND COLLECTIVE DOSE IN LIGHT OF CIPR RECOMMENDATIONS.
H. Jammett, and D. Mechali. 1974, 8p CONF-740529-6
Translation of paper SM-184/30.

Descriptors: (*Human populations, *Radiation protection), (*Personnel, Radiation protection), (*Icrp, *Recommendations), Dose commitments, Environment, Man, Maximum permissible dose, Radiation doses, Radioactivity, Safety standards, Standards.

For abstract, see NSA 30 05, number 12914.

CNAEM-R-108 PC$4.00/MF$2.25
Cekmece Nuclear Research Center, Istanbul (Turkey).
RECENT DEVELOPMENTS IN RADIOPHARMACEUTICALS.
M. Tubis. 1973, 12p
U.S. Sales Only.

Descriptors: (*Radiopharmaceuticals, *Chemical preparation), Abscesses, Biliary tract, Blood flow, Bone tissues, Carcinomas, Cardiovascular diseases, Diagnosis, Diagnostic techniques, Indium 113, Iodine 131, Isomeric nuclei, Kidneys, Labelled compounds, Liver, Lungs, Metabolic diseases, Nuclear medicine, Respiratory system diseases, Scintiscanning, Skeletal diseases, Sterility, Technetium 99, Testing, Urogenital system diseases.

For abstract, see NSA 30 04, number 10058.

CONF-720131- PC$5.00/MF$2.25
Tennessee Univ., Knoxville.
MUTATION BREEDING WORKSHOP, JANUARY 17--18, 1972, KNOXVILLE, TENNESSEE.
1972, 36p

Descriptors: (*Plants, *Genetic radiation effects), (*Mutations, *Radioinduction), (*Plant breeding, *Meetings), Ionizing radiations, Mutagens.

For abstract, see NSA 30 04, number 09761.

CONF-740708-1 PC$4.00/MF$2.25
Oak Ridge National Lab., Tenn.
METABOLIC MODEL FOR COPPER FOR USE IN INTERNAL DOSE ESTIMATION.
S. R. Bernard. 3p

Descriptors: (*Copper 64, *Retention), (*Liver, *Radionuclide kinetics), (*Ceruloplasmin, Radionuclide kinetics), (*Kidneys, Radionuclide kinetics), Albumins, Compartments, Erythrocytes, Mathematical models, Metabolism, Radiation doses, Tissue distribution, Tissues.

For abstract, see NSA 30 04, number 09987.

COO-1156-66 PC$8.75/MF$2.25
Colorado State Univ., Fort Collins.
CHRONIC GAMMA RADIATION STRESS ON SOIL MICROORGANISMS OF A GRASSLAND.
S. Jr. Sparrow. May 73, 115p

Descriptors: (*Soils, *Biological radiation effects), (*Fungi, Biological radiation effects), (*Algae, Biological radiation effects), Azotobacter, Bacteria, Chemical composition, Chemical radiation effects, Dose-response relationships, Gamma sources, Irradiation, Nitrogen fixation, Photosynthesis, Survival time, Terrestrial ecosystems.

For abstract, see NSA 30 04, number 09723.

COO-1156-69 PC$7.25/MF$2.25
Colorado State Univ., Fort Collins Dept. of Radiology and Radiation Biology.
STRONTIUM KINETICS IN MULE DEER.
R. G. Schreckhise. May 74, 82p

Descriptors: (*Deer, *Radionuclide kinetics), (*Strontium 85, *Tissue distribution), Age dependence, Biological models, Colorado, Mathematical models, Oral administration, Radionuclide administration, Retention, Seasonal variations, Terrestrial ecosystems, Whole-body counting.

For abstract, see NSA 30 04, number 10022.

COO-1826-28 PC$4.00/MF$2.25
Saint Mary's Hospital, Grand Junction, Colo. Dept. of Pathology.
URANIUM MINER LUNG CANCER STUDY. PROGRESS REPORT.
G. Saccomanno. 22 Mar 74, 15p
Contract AT(11-1)-1826

Descriptors: (*Miners, *Health hazards), (*Neoplasms, *Radioinduction), (*Tobacco smokes, Health hazards), (*Lungs, Neoplasms), Air, Air pollution, Environment, Epidemiology, Mines, Radioactivity, Synergism, Uranium ores.

For abstract, see NSA 30 04, number 09988.

COO-2000-108 PC$4.75/MF$2.25
Purdue Univ., Lafayette, Ind.
LOW-LEVEL X-IRRADIATION OF THE BRAIN DURING DEVELOPMENT: MORPHOLOGICAL, PHYSIOLOGICAL, AND BEHAVIORAL CONSEQUENCES. COMPREHENSIVE PROGRESS REPORT, JUNE 15, 1962--AUGUST 31, 1974.
J. Altman. 1974, 33p
Contract AT(11-1)-2000

Descriptors: (*Brain, *Biological radiation effects), (*Rats, *Behavior), Acute irradiation, Animal cells, Autoradiography, Biological regeneration, Biosynthesis, Cell proliferation, Central nervous system, Delayed radiation effects, Dna, Dose-response relationships, Fractionated irradiation, Infants, Local irradiation, Low dose irradiation, Morphological changes, Physiology, Proteins, Reflexes, Rna, Survival time, Tracer techniques, Vision, X radiation.

For abstract, see NSA 30 04, number 09864.

COO-2005-8 PC$4.00/MF$2.25
Notre Dame Univ., Ind.
BIOCHEMICAL ASPECTS OF ERYTHROPOIESIS IN CHRONIC IRRADIATION. FINAL REPORT.
C. E. Brambel. 1 May 74, 11p
Contract AT(11-1)-2005

Descriptors: (*Erythropoiesis, *Biological radiation effects), (*Anemias, *Radioinduction), (*Spleen, Erythropoiesis), Anoxia, Chronic irradiation, Hematopoietic system, Hemoglobin, Hemolysis, Hemorrhage, Molecular structure, Rats, Response modifying factors.

For abstract, see NSA 30 05, number 12964.

COO-2085-8 PC$5.25/MF$2.25
Michigan Technological Univ., Houghton.
PHYSICO-ECOLOGICAL STUDIES ON GAMMA IRRADIATED AND NON-IRRADIATED CLADONIA SYLVATICA (L.) HOFFM.
J. M. Barstow. 1974, 44p
Contract AT(11-1)-2085

Descriptors: (*Lichens, *Biological radiation effects), Acute irradiation, Communities, Dose-response relationships, Environment, Gamma radiation, Morphological changes, Photosynthesis, Plant growth, Response modifying factors, Temperature dependence, Terrestrial ecosystems, Variations, Visible radiation.

For abstract, see NSA 30 04, number 09762.

COO-2362-1 PC$4.00/MF$2.25
Pennsylvania State Univ., University Park Dept. of Biophysics.
BASIC ASPECTS OF RADIATION ACTION ON MICROORGANISMS. PROGRESS REPORT, MAY 31, 1973--JANUARY 1, 1974.
E. C. Pollard. Feb 74, 7p
Contract AT(11-1)-2362

Descriptors: (*Escherichia coli, *Biological radiation effects), (*Bacteriophages, *Host-cell reactivation), (*Dna, *Biosynthesis), Ionizing radiations, Irradiation, Molecular biology.

For abstract, see NSA 30 04, number 09724.

COO-2403-6 PC$4.75/MF$2.25
Massachusetts General Hospital, Boston John Collins Warren Labs.
EARLY STEPS IN PROTEIN SYNTHESIS AND THEIR REGULATION: A BACKGROUND STUDY RELATED TO THE BIOLOGICAL EFFECTS OF RADIATION. PROGRESS REPORT, JULY 1, 1973--JUNE 30, 1974.
P. C. Zamecnik. 1974, 34p
Contract AT(11-1)-2403

Descriptors: (*Proteins, *Biosynthesis), Messenger-rna, Molecular biology, Viruses.

For abstract, see NSA 30 04, number 09725.

COO-3212-17 PC$4.00/MF$2.25
Health Research, Inc., Albany, N.Y.
THREE YEAR COMPREHENSIVE REPORT.
Feb 74, 7p
Contract AT(11-1)-3212

Descriptors: (*Animal cells, *Biological radiation effects), Cell constituents, Design, Endor, Molecular biology, Molecules, Nucleic acids, Oxidation, Plant cells, Radiation injuries, Reduction, Spectrometers.

For abstract, see NSA 30 04, number 09708.

COO-3217-26 PC$4.50/MF$2.25
Tropical Agricultural Research and Training Center, Turrialba (Costa Rica).
APPLICATION OF NUCLEAR ENERGY TO AGRICULTURE. PROGRESS REPORT, APRIL 1, 1973--MARCH 31, 1974.
C. C. Moh. 1974, 29p
Contract AT(11-1)-3217

Descriptors: (*Mutations, *Radioinduction), (*Coffee plants, *Plant breeding), (*Phaseolus, Plant breeding), (*Cassava, Plant breeding), Agriculture, Biological radiation effects, Chemical composition, Color, Crops, Food, Irradiation, Morphological changes, Plant growth, Pollen, Tropical regions.

For abstract, see NSA 30 05, number 12905.

COO-3267-6 PC$4.25/MF$2.25
Jackson Lab., Bar Harbor, Maine.
RADIATION-INDUCED CHROMOSOMAL INVERSIONS IN MICE. PROGRESS REPORT, 1 JUNE 1973--31 MAY 1974.
D. W. Bailey. 1974, 21p
Contract AT(11-1)-3267

Descriptors: (*Spermatozoa, *Biological radiation effects), (*Chromosomal aberrations, *Radioinduction), Biological effects, Delayed radiation effects, Irradiation, Mice, Mutagens, Progeny, X radiation.

For abstract, see NSA 30 04, number 09865.

COO-3380-13 PC$4.25/MF$2.25
New York Univ., N.Y. Inst. of Environmental Medicine.
PROLIFERATION OF EARLY TUMOR FOCI IN IRRADIATED RAT SKIN. PERIOD COVERED: AUGUST 1, 1973--JULY 31, 1974.
F. J. Burns, M. Vanderlaan, and R. E. Albert. 1974, 22p CONF-740715-1
Contract AT(11-1)-3380

Descriptors: (*Skin, Neoplasms), (*Neoplasms, *Radioinduction), Biological radiation effects, Carcinogenesis, Depth, Dose-response relationships, Electrons, External irradiation, Growth, Radiation doses, Rats, Time dependence, X radiation.

For abstract, see NSA 30 05, number 12965.

COO-3380-16 PC$4.00/MF$2.25
New York Univ., N.Y. Inst. of Environmental Medicine.
TUMORIGENIC ACTION OF BETA, PROTON, ALPHA, AND ELECTRON RADIATION ON THE RAT SKIN. PROGRESS REPORT, AUGUST 1, 1973--JULY 31, 1974.
R. E. Albert, and F. J. Burns. 1974, 14p
Contract AT(11-1)-3380

Descriptors: (*Skin, *Biological radiation effects), (*Neoplasms, *Radioinduction), (*Hair follicles, *Radiosensitivity), Acute irradiation, Alpha particles, Animal cells, Beta particles, Biological recovery, Carcinogenesis, Cell cycle, Cell proliferation, Depth dose distributions, Dose rates, Electrons, Epithelium, External irradiation, Fractionated irradiation, Growth, Let, Nonuniform irradiation, Protons, Radiation doses, Rats, Response modifying factors, Spatial dose distributions, Temporal dose distributions, Tumor cells.

For abstract, see NSA 30 04, number 09866.

COO-3399-4 PC$4.00/MF$2.25
Pennsylvania Univ., Philadelphia Dept. of Radiology.
DEVELOPMENT OF SCAN ANALYSIS TECHNIQUES EMPLOYING A SMALL COMPUTER. PROGRESS REPORT, AUGUST 1, 1973--JULY 31, 1974.
D. E. Kuhl. 1974, 7p
Contract AT(11-1)-3399

Descriptors: (*Brain, *Scintiscanning), Blood flow, Computer calculations, Diagnostic techniques, Erythrocytes, Images, Isomeric nuclei, Labelled compounds, Nuclear medicine, Patients, Radionuclide administration, Radionuclide kinetics, Technetium 99.

For abstract, see NSA 30 04, number 10059.

COO-3419-8 PC$4.00/MF$2.25
Pennsylvania State Univ., University Park Dept. of Biophysics.
STUDIES ON VIRUS-INDUCED CELL FUSION. PROGRESS REPORT, AUGUST 1, 1973--JULY 31, 1974.
S. Person. 1974, 5p
Contract AT(11-1)-3419

Descriptors: (*Bacteria, *Biological radiation effects), (*Tritium, Biological radiation effects), Adenosine, Beta particles, Cytosine, Decay, Dna, Guanosine, Internal irradiation, Labelled compounds, Mortality, Mutations, Radioinduction, Strand breaks, Thymidine.

For abstract, see NSA 30 04, number 09709.

COO-3673-1 PC$4.25/MF$2.25
Georgetown Univ., Washington, D.C.
VIRUS INDUCED MUTATION AND IRRADIATION. FINAL REPORT.
R. C. Baumiller. 1973, 25p
Contract AT(11-1)-3673

Descriptors: (*Drosophila, *Biological radiation effects), (*Viruses, *Biological effects), (*Mutations, *Radioinduction), Irradiation, Lethal mutations, Mutation frequency, Synergism, X radiation.

For abstract, see NSA 30 05, number 13001.

EUR-5101 PC$11.75/MF$2.25
Commission of the European Communities, Luxembourg; Instituut voor Toepassing van Atoomenergie in de Landbouw, Wageningen (Netherlands).
APPLICATION OF ATOMIC ENERGY IN AGRICULTURE. ANNUAL REPORT, 1972.
Feb 74, 174p
U.S. Sales Only.

Descriptors: (*Mutations, *Radioinduction), (*Potatoes, Mutations), (*Barley, Mutations), (*Peas, Mutations), Biological radiation effects, Flies, Insect dispersal, Insects, Pest control, Sterile male technique, Agriculture, Plant breeding, Fast neutrons, Fractionated irradiation, Leaves, Metabolism, X radiation, Food, Meat, Radiopreservation, Seafood, Vegetables, Calcium, Nitrogen, Phosphates, Plants, Root absorption, Soils, Tracer techniques.

For abstract, see NSA 30 04, number 09763.

EUR-5123 PC$4.00/MF$2.25
CEA Centre d'Etudes Nucleaires de Fontenay-aux-Roses, 92 (France).
THIN LAYER AND GAS-CHROMATOGRAPHIC ANALYSIS OF ALVEOLAR LIPIDS IN SILICOTIC RATS.
R. Batti, B. Arnoux, G. Lamy, and R. Masse. Apr 74, 18p
U.S. Sales Only.

Descriptors: (*Pneumoconioses, *Diagnosis), Animal cells, Carbon 14 compounds, Chromatography, Lipids, Lungs, Quantitative chemical analysis, Quantity ratio, Rats, Respiratory system, Sampling, Tissues, Tracer techniques.

For abstract, see NSA 30 04, number 10060.

JPRS-62510 PC$3.00/MF$2.25
Joint Publications Research Service, Arlington, Va.
ELEMENTS OF SIMILARITY IN THE REACTION OF THE LYMPHOID TISSUE TO ANTIGENIC AND NONANTIGENIC (ALTERNATING MAGNETIC FIELD) STIMULATION,
N. V. Vasilev, L. F. Boginich, and G. G. Shilaeva. 18 Jul 74, 9p
Trans. of Arkhiv Patologii (USSR) n9 p47-51 1971.

Descriptors: *Magnetic fields, *Radiobiology, *Radiation effects, Rats, Thymus gland, Lymph nodes, Cells(Biology), USSR, Translation.

The report contains a study of cellular reaction of the spleen, thymus, and lymph nodes of albino rats in an alternating magnetic field of 200 oersteds and a frequency of 50 hertz.

JPRS-62520 PC$3.00/MF$2.25
Joint Publications Research Service, Arlington, Va.
PERMEABILITY OF THE MUCOUS MEMBRANE OF THE FRONTAL SINUS UNDER THE INFLUENCE OF MICROWAVES,
V. R. Faitelberh-Blank, and M. P. Kharein. 19 Jul 74, 12p
Trans. of Fiziologichnyi Zhurnal (USSR) v20 n1 p100-107 1974.

Descriptors: *Radiobiology, *Radiation effects, *Health physics, *Paranasal sinuses, Respiratory systems, Microwaves, Mucus, Translations, USSR, Dosage, Membranes, Dose rate.

The report contains a study on the effects of various doses of microwaves on the permeability of the mucous membrane of the frontal sinus.

NERC-LV-539-32 PC$4.00/MF$2.25
National Environmental Research Center, Las Vegas, Nev.
BEHAVIOR OF EXP 131 I IN AN ARTIFICIAL RUMEN AND IN THE SIMULATED FLUIDS OF THE ABOMASUM AND INTESTINE.
J. Barth, E. L. Whittaker, and D. S. Barth. May 74, 11p
Contract AT(26-1)-539

Descriptors: (*Iodine 131, *Tissue distribution), (*Gastrointestinal tract, *Biological models), (*Cattle, *Radionuclide kinetics), In vitro, Oral administration, Sodium iodides, Testing, Volatility.

For abstract, see NSA 30 05, number 13019.

NP-20020 PC$4.25/MF$2.25
Universidade Federal de Pernambuco, Recife (Brazil). Centro de Energia Nuclear.
ASPECTS OF RADIATION DOSIMETRY AND RADIOLOGICAL PROTECTION IN CANCER HOSPITALS OF THE NORTHEAST BRAZIL.
H. C. Melo, and I. C. Roesler. 7 Jun 72, 24p
U.S. Sales Only.

Descriptors: (*Radiotherapy, *Radiation protection), (*Medical personnel, *Personnel dosimetry), Brazil, Gamma radiation, Radiation doses, X radiation.

For abstract, see NSA 30 04, number 09800.

ORNL-TM-4590 PC$4.00/MF$2.25
Oak Ridge National Lab., Tenn.
CALCULATION OF RESIDUAL NUCLEI PRODUCTION BY A BEAM OF NEGATIVELY-CHARGED PIONS INCIDENT ON A TISSUE PHANTOM.
T. W. Armstrong, and K. C. Chandler. Jun 74, 17p
Contract W-7405-eng-26

Descriptors: (*Tissues, *Charged-particle transport), (*Radiotherapy, *Pions minus), Monte carlo method, Phantoms, Pion beams, Pion reactions.

For abstract, see NSA 30 04, number 11659.

ORO-2690-14 PC$7.00/MF$2.25
Florida State Univ., Tallahassee Inst. of Molecular Biophysics.
RESEARCH PROPOSAL AND ANNUAL REPORT NO. 14, SEPTEMBER 1, 1973--AUGUST 31, 1974. PART B.
1 Jun 74, 76p

Descriptors: (*Molecular biology, *Research programs), (*Biophysics, Research programs), Animal cells, Biochemical reaction kinetics, Biological materials, Biological radiation effects, Biological repair, Cell constituents, Cell proliferation, Chromatin, Chromosomal aberrations, Collagen, Contraction, Dna, Enzymes, External irradiation, Internal irradiation, Molecular structure, Molecules, Nucleic acids, Organic polymers, Oxygen, Photochemistry, Radiosensitivity effects, Tumor cells, Vision.

For abstract, see NSA 30 04, number 09692.

ORO-3728-7 PC$4.00/MF$2.25
Louisiana State Univ., Baton Rouge Dept. of Zoology and Physiology.
MUTAGENIC EFFECT OF RADIONUCLIDES INCORPORATED INTO DNA OF DROSOPHILA MELANOGASTER. PROGRESS REPORT, 1973--1974.
W. R. Lee. 1974, 9p
Contract AT(40-1)-3728

Descriptors: (*Drosophila, Genetic radiation effects), (*Tritium, *Uptake), (*Genetic radiation effects, *Research programs), Cytosine, Deoxycytidine, Labelled compounds, Labelling, Thymidine.

For abstract, see NSA 30 04, number 09979.

ORO-4024-4(App.1) PC$4.00/MF$2.25
Texas Univ., Houston Graduate School of Biomedical Sciences.
EFFECT OF RADIATION-SENSITIVE MUTATIONS AND RADIATION ON RECOMBINATION IN PARTIALLY DIPLOID DERIVATIVES OF ESCHERICHIA COLI. PROGRESS REPORT.
A. G. Jr. Knudson. May 74, 16p
Contract AT(40-1)-4024

Descriptors: (*Escherichia coli, *Biological radiation effects), (*Chromosome breakage, *Biological repair), Chromosomal aberrations, Dimers, Genetics, Mutations, Radiosensitivity, Response modifying factors, Thymine, Ultraviolet radiation.

For abstract, see NSA 30 04, number 09728.

ORO-4241-4 PC$6.50/MF$2.25
Smithsonian Institution, Rockville, Md. Radiation Biology Lab.
STUDY OF THE BIOCHEMICAL EFFECTS OF IONIZING AND NONIONIZING RADIATION ON PLANT METABOLISM DURING DEVELOPMENT. PROGRESS REPORT, SEPTEMBER 1, 1973--AUGUST 31, 1974.
W. H. Klein. 1974, 66p
Contract AT(40-1)-4241

Descriptors: (*Arabidopsis, *Biological radiation effects), Abundance, Germination, Phytochromes, Seeds, Visible radiation.

For abstract, see NSA 30 05, number 12908.

RFP-1783 PC$4.00/MF$2.25
Dow Chemical U.S.A., Golden, Colo. Rocky Flats Div.
SUMMARY OF THE DISTRIBUTION OF PLUTONIUM IN THE TISSUES OF 12 OCCUPATIONALLY EXPOSED WORKERS.
C. R. Lagerquist, S. E. Hammond, D. L. Bokowski, and D. B. Hylton. 17 Sep 71, 14p
CONF-711013-2
Contract AT(29-1)-1106

Descriptors: (*Plutonium, *Tissue distribution), (*Personnel, *Radionuclide kinetics), Autopsy, Chronic intake, Comparative evaluations, Liver, Lungs, Lymph nodes, Quantitative chemical analysis, Retention, Sampling, Skeleton, Tissues, Urine.

For abstract, see NSA 30 04, number 09992.

SGAE-2247 PC$4.00/MF$2.25
Oesterreichische Studiengesellschaft fuer Atomenergie G.m.b.H., Seibersdorf. Inst. fuer Biologie.

INVESTIGATIONS INTO THE EFFECT OF DIFFERENT FUROCUMARINES ON DNA REPAIR AND SEMICONSERVATIVE DNA SYNTHESIS.
G. Wittauer, M. Pailer, and H. Altmann. Feb 74, 14p CONF-731215-3
In German. U.S. Sales Only.

Descriptors: (*Dna, *Biological radiation effects), Biological repair, Biosynthesis, Coumarin, Gamma radiation, Heterocyclic compounds, Inhibition, Irradiation, Mice, Organic oxygen compounds, Psoralen, Spleen, Thymidine, Ultraviolet radiation.

For abstract, see NSA 30 04, number 09693.

SGAE-2261 PC$4.00/MF$2.25
Oesterreichische Studiengesellschaft fuer Atomenergie G.m.b.H., Seibersdorf. Inst. fuer Biologie.
INFLUENCE OF INDOMETACIN ON SEMICONSERVATIVE DNA SYNTHESIS AND DNA REPAIR.
F. Kocsis, R. Eberl, and H. Altmann. Mar 74, 14p CONF-7309106-1
In German. U.S. Sales Only.

Descriptors: (*Tumor cells, *Biological radiation effects), (*Dna, *Biological repair), (*Lymphocytes, Biological radiation effects), (*Drugs, *Biological effects), Cell cultures, Chemotherapy, Dna replication, Gamma radiation, In vitro, Neoplasms, Patients, Radiation injuries, Sampling, Ultraviolet radiation.

For abstract, see NSA 30 04, number 09694.

SGAE-2271 PC$4.00/MF$2.25
Oesterreichische Studiengesellschaft fuer Atomenergie G.m.b.H., Seibersdorf. Inst. fuer Biologie.
DETERMINATION OF DNA REPAIR PROCESSES IN PERFUSED ORGANS.
R. Hruby. Apr 74, 7p
In German. U.S. Sales Only.

Descriptors: (*Perfused organs, *Biological radiation effects), (*Dna, *Biological repair), Animals, Gamma radiation, Ultraviolet radiation.

For abstract, see NSA 30 04, number 09871.

SRO-637-3 PC$7.50/MF$2.25
Georgia Univ., Tifton Georgia Coastal Plain Experiment Station.
DEVELOPMENT OF NEW TECHNIQUES OF USING IRRADIATION IN THE GENETIC IMPROVEMENT OF WARM SEASON GRASSES AND ASSESSMENT OF THE GENETIC AND CYTOGENETIC EFFECTS. PROGRESS REPORT, AUGUST 1, 1973--APRIL 30, 1974.
G. W. Burton, and W. W. Hanna. 90p
Contract AT(38-1)-637

Descriptors: (*Mutations, *Radioinduction), (*Grass, *Genetic radiation effects), (*Seeds, *Biological radiation effects), (*Pollen, Biological radiation effects), Agriculture, Cattle, Crops, Disease resistance, Food, Forage, Gamma radiation, Irradiation, Maize, Millet, Nematodes, Parasites, Plant breeding, Plant stems, Sorghum, Thermal neutrons.

For abstract, see NSA 30 04, number 09771.

SRO-642-4 PC$5.00/MF$2.25
Georgia Univ., Athens School of Forest Resources.
EVALUATION OF THE FACTORS INVOLVED IN BIOACCUMULATION OF GAMMA-EMITTING RADIONUCLIDES IN WHITE-TAILED DEER (ODOCOILEUS VIRGINIANUS). FIFTH TECHNICAL PROGRESS REPORT, FEBRUARY 1, 1973--JUNE 30, 1974.
J. H. Jenkins. 1 Apr 74, 37p
Contract AT(38-1)-642

Descriptors: (*Strontium 90, *Radioecological concentration), (*Cesium 137, Radioecological concentration), (*Deer, *Radionuclide kinetics), Bone tissues, Food chains, Georgia, Man, Meat, Muscles, Sampling, South carolina, Tissue distribution, Uptake.

For abstract, see NSA 30 05, number 13020.

SU-326-P-7-26 PC$4.00/MF$2.25
Stanford Univ., Calif. Dept. of Biological Sciences.
REPAIR OF DAMAGED DNA IN VIVO. ANNUAL PROGRESS REPORT, JUNE 1, 1973--MAY 1, 1974.
P. C. Hanawalt. May 74, 6p
Contract AT(04-3)-326

Descriptors: (*Dna, Strand breaks), (*Strand breaks, *Biological repair), Biochemical reaction kinetics, Biological radiation effects, Dna replication, Enzymes, Escherichia coli, Hela cells, Irradiation, Molecular biology, Radioinduction, Ultraviolet radiation.

For abstract, see NSA 30 05, number 12852.

SU-326-P-7-27 PC$4.25/MF$2.25
Stanford Univ., Calif. Dept. of Biological Sciences.
REPAIR OF DAMAGED DNA IN VIVO.
P. C. Hanawalt. May 74, 23p
Contract AT(04-3)-326-7

Descriptors: (*Dna, Strand breaks), (*Strand breaks, *Biological repair), Bacteria, Biological radiation effects, Hela cells, Irradiation, Molecular biology, Radioinduction, Ultraviolet radiation.

For abstract, see NSA 30 05, number 12853.

TID-26113 PC$7.60/MF$2.25
Forest Service, Rhinelander, Wis. North Central Forest Experiment Station.
ENTERPRISE, WISCONSIN, RADIATION FOREST: PREIRRADIATION ECOLOGICAL STUDIES.
T. D. Rudolph. 1974, 158p

Descriptors: (*Terrestrial ecosystems, *Site selection), (*Forests, *Biological radiation effects), Biological wastes, Chronic irradiation, Communities, Environment, Gamma radiation, Leaves, Low dose irradiation, Mammals, Photosynthesis, Plants, Shrubs, Solar radiation, Trees, Variations, Vertebrates, Visible radiation, Wild animals, Wisconsin.

For abstract, see NSA 30 04, number 09772.

TID-26570 PC$18.00/MF$2.25
Vanderbilt Univ., Nashville, Tenn.
METHODS FOR QUANTITATIVE ASSAY OF RADIOACTIVITY IN MAN: TOTAL BODY AND REGIONAL DISTRIBUTIONS.
J. R. Watts. Dec 71, 300p
Contract AT(40-1)-2401

Descriptors: (*Nuclear medicine, Whole-body counters), (*Whole-body counters, *Performance testing), (*Potassium 42, *Whole-body counting), Cobalt 57, Collimators, Diagnostic techniques, Iodine 131, Man, Radioisotope scanning, Radionuclide kinetics.

For abstract, see NSA 30 04, number 10076.

TID-26572 PC$9.00/MF$2.25
Vanderbilt Univ., Nashville, Tenn.
RADIOISOTOPE STUDIES UTILIZING A LOW LEVEL WHOLE BODY COUNTER AND CLINICAL APPLICATIONS OF ACTIVATION ANALYSIS. PROGRESS REPORT.
A. B. Brill. 30 Apr 74, 120p
Contract AT(40-1)-2401

Descriptors: (*Radiopharmaceuticals, *Whole-body counting), (*Activation analysis, Nuclear medicine), (*Nuclear medicine, *Whole-body counters), (*Skeletal diseases, *Diagnosis), Computer codes, Computers, Cesium 137, Man, Radiation monitoring, Bismuth 206, Cholesterol, Dtpa, Indium 111, Iodine 131, Isomeric nuclei, Labelled compounds, Metabolic diseases, Osteoporosis, Radionuclide kinetics, Technetium 99, Ytterbium 169, Californium 252, Cardiovascular diseases, Neutron reactions, Neutron sources, Patients.

For abstract, see NSA 30 04, number 10077.

UCD-34-P-210-X-1 PC$4.00/MF$2.25
California Univ., Davis.
ANNUAL PROGRESS REPORT, 1 SEPTEMBER 1973--1 APRIL 1974.
J. B. Boyd. 1974, 2p
Contract AT(04-3)-34

Descriptors: (*Drosophila, *Mutants), Biological repair, Dna, Molecular biology, Radiosensitivity, Strand breaks.

For abstract, see NSA 30 05, number 13002.

UCLA-12-964 PC$4.00/MF$2.25
California Univ., Los Angeles Lab. of Nuclear Medicine and Radiation Biology.
RADIONUCLIDE EVALUATION OF RENAL TRANSPLANT STATUS.
M. Hayes, T. C. Moore, and G. V. Taplin. 1973, 13p
Contract AT(04-1)-GEN-12

Descriptors: (*Kidneys, *Scintiscanning), (*Transplants, *Graft-host reaction), Diagnostic techniques, Hippuran, Iodine 131, Nuclear medicine, Patients, Physiology, Radionuclide administration, Uptake.

For abstract, see NSA 30 04, number 10078.

UR-3055-9 PC$10.25/MF$2.25
Rochester Univ., N.Y. Dept. of Radiation Biology and Biophysics.
ERYTHROPOIETIN AND MACROCYTIC ERYTHROPOIESIS IN NORMAL AND X-IRRADIATED DOGS.
G. E. Kaufman. 1974, 145p

Descriptors: (*Erythropoiesis, *Biological radiation effects), (*Erythropoietin, *Biosynthesis), (*Erythrocytes, Biological radiation effects), Anemias, Biological recovery, Blood plasma, Bone marrow, Dogs, Dose-response relationships, Quantity ratio, Radiation injuries, Whole-body irradiation, X radiation.

For abstract, see NSA 30 04, number 09872.

UR-3490-537 PC$7.25/MF$2.25
Rochester Univ., N.Y. Dept. of Radiation Biology and Biophysics.
LASER RADIATION: BIOLOGIC EFFECTS AND HAZARD EVALUATION.
S. M. Michaelson. 1974, 81p

Descriptors: (*Lasers, *Biological radiation effects), Eyes, Man, Radiation hazards, Radiosensitivity.

For abstract, see NSA 30 04, number 12148.

6S. Stress Physiology

AD-783 480/7GA PC$3.00/MF$2.25
Edgewood Arsenal Aberdeen Proving Ground Md
SERUM OSMOLALITY IN ACUTELY INJURED PATIENTS.
Technical rept. Jan-May 74,
M. A. Weinstein, W. J. Sacco, P. J. Nyikos, W. Gill, and H. R. Champion. Jun 74, 12p Rept no. EB-TR-74034

Descriptors: *Trauma, *Homeostasis, Etiology, Patients, Central nervous system, Kidneys, Failure, Stress(Physiology), Crash injuries, Pathology, Wounds and injuries, Therapy, Feeding.
Identifiers: *Osmolality.

The study was to determine the etiology and to evaluate the prognostic significance of serum hyperosmolality in acutely injured patients. The case histories of 700 patients admitted to the Maryland Institute for Emergency Medicine were examined, and those of 72 patients with serum hyperosmolalities greater than 340 mOsm/kg were selected for this retrospective study. Of the group selected, 12.5% survived and 87.5% expired. The hyperosmolar state in 56% of the survivors resulted from their therapy (hyperalimentation or mannitol infusion). Of those that died, 79% had kidney failure and 11% had central nervous system injury. The main determinant of prognosis when hyperosmolality is present is organ system failure (particularly the kidney). If hyperosmolality is associated with renal failure, the prognosis is poor. As hyperosmolality in a patient without major organ system dysfunction is frequently a complication of therapy, it is usually reversible. Therefore, the serum osmolality of all patients on hyperalimentation or steroids should be followed carefully and frequently. (Author)

AD-783 598/6GA Reprint
Beth Israel Medical Center New York
PATHOGENESIS AND TREATMENT OF DECOMPRESSION SICKNESS,
Chryssanthos P. Chryssanthou. 1974, 6p
Contract N00014-68-A-0393
Presented at the Annual Meeting of the Medical Society of the State of New York (167th) New York, N.Y. 13 Feb 73.
Availability: Pub. in New York State Jnl. of Medicine, v74 n5 p808-812 May 74.

Descriptors: *Decompression sickness, *Hyperbaric conditions, Pathogenesis, Chemotherapy, Naval research, Stress(Physiology), Gas embolism, Etiology.
Identifiers: Hyperbaric medicine, Preventive medicine, Phenothiazine sulfonamide/(dimethylamino)propyl-N-N-dimethyl, Cyclohexanone/phenyl-piperazinylmethyl.

The striking decompression sickness-preventing effect of 2,4 phenyl-l-piperazinylmethyl-cyclohexanone and dimethothiazine is considered to be primarily due to the ability of these compounds to block the action of smooth muscle-stimulating substances. Other mechanisms, however, cannot be ruled out. The findings of these investigations are consistent with the postulate that humoral factors are involved in the mechanism of decompression sickness. This pathogenetic concept provides the basis for a new pharmacologic approach to the prevention or amelioration of the disease.

AD-783 611/7GA PC$3.75/MF$2.25
Rand Corp Santa Monica Calif
MATHEMATICAL MODELS FOR SIMULATING PHYSIOLOGICAL RESPONSES TO SEVERE MILITARY STRESS: RENAL FUNCTION DETAILS,
J. H. Bigelow, J. C. DeHaven, and M. L. Shapley.
Jun 73, 61p Rept no. R-1080-PR
Contract F44620-73-C-0011

Descriptors: *Stress(Physiology), *Mathematical models, *Response(Biology), Urinary system, Air force, Kidneys, Medical research, Military medicine, Blood pressure, Computerized simulation, Osmosis, Experimental data, Metabolism.
Identifiers: Renal mechanisms, Hypotonic.

A previous model of the renal function and compartmented whole body, which incorporated actions of antidiuretic hormone on urine flow and composition, is extended to include the influences of additional phenomena, many exogenous to the kidney. These include the intrinsic-osmotic effect of water; details of the body's antidiuretic hormone cycle; gastrointestinal exchanges; changes in glomerular filtration caused by alternation in blood volume and pressure; and resistance to flow across kidney tubular walls. The responses of the model were validated by comparison with responses of actual subjects, as reported in the literature. The model was exposed to and responded correctly to physiological stresses.

AD-783 642/2GA PC$3.75/MF$2.25
Iowa Univ Iowa City Dept of Physiology and Biophysics
PHYSIOLOGIC TESTS TO DIFFERENTIATE DOGS WITH DIFFERENT FUNCTIONAL CAPABILITIES.
Final rept. 15 Mar 70-1 Mar 73,
Charles M. Tipton, and Howard H. Erickson. Jul 74, 59p SAM-TR-74-14
Contract F41609-70-C-0011

Descriptors: *Exercise(Physiology), *Stress(Physiology), *Dogs, Biophysics, Physiology, Aerospace medicine, Laboratory animals, Blood pressure, Blood flow, Atropine, Training, Heart, Confinement(Psychology), Catecholamines.

The study was undertaken to develop and evaluate physiologic tests that could be used to differentiate dogs assigned to various experimental groups. More than 75 different animals weighing 8-26 kg were used; most were males. To physically stress the animal, a 21-min, 7-stage, submaximal treadmill test was developed, standardized, and used. The test started at 4.8 km/hr at 0% grade and terminated at 6.4 km/hr on a 20% grade. Dogs were assigned to four groups with different energy requirements: trained, nontrained, trained-detrained, or nontrained confined to smaller cages. Measurements associated with exercise heart rates, postexercise lactic acid levels, changes in heart rate after atropine and propranolol injections, increases in blood pressures after norepinephrine injections, the size of fat cells, and muscle cytochrome oxidase activity could effectively differentiate nontrained and trained dogs. (Modified author abstract)

AD-783 714/9GA Not available NTIS
Defence and Civil Inst of Environmental Medicine Downsview (Ontario)
ERRONEOUS PERCEPTION OF VERTICAL MOTION BY HUMANS SEATED IN THE UPRIGHT POSITION,
R. Malcolm, and G. Melvill Jones. 11 May 73, 10p
Summary in German.
Availability: Pub. in Acta Otolarying, v77 p274-283 1974.

Descriptors: *Vestibular apparatus, *Vertical orientation, *Perception, Stress(Physiology), Acceleration, Response(Biology), Canada, Helicopters, Humans, Senses(Physiology), End organs.

The reliability of subjective response to vertical linear accelerations in the absence of vision has been examined in human subjects seated in the upright position. Helicopters and a vertical movement simulator were used to generate sinusoidal vertical movement of period 2-10 sec and acceleration amplitude 0.2-0.4 g. Subjective response was recorded as a continually variable assessment of vertical position. Detailed consideration of end-organ orientation in the skull suggests the possibility that relative paucity of vestibular afferent information about vertical movement may account at least in part for the poor tracking performance observed in these experiments.

AD-783 715/6GA PC$3.00/MF$2.25
Pittsburgh Univ Pa Dept of Occupational Health
NEGATIVE WORK IN EXERCISE STINTS AND SHORT HEAT EXPOSURE FOR ACCLIMATION.
Final technical rept. 1 May 71-31 Jul 74,
Eliezer Kamon, and Harwood S. Belding. 31 Jul 74, 23p
Sponsored in part by Office of Naval Research, Arlington, Va.

Descriptors: *Acclimatization, *Work, *Heat stress(Physiology), High temperature, Environments, Exercise(Physiology), Naval research, Stress(Physiology), Humans, Heart, Body temperature, Exposure(Physiology).

Eighteen young adults were subjected to daily treatments of 30 minutes of either light negative and/or moderate to heavy positive work on a laddermill at 22C followed by 30 minutes of either 3.5 mph walk at 50C/25C db/wb room temperatures or sitting under these ambient conditions with additional radiant heat, for four days. Their state of acclimatization was tested by exposure, up to 120 minutes, to 50C/25C db/wb using the following specific criteria: tolerance time (t) to 3.5 mph walk; evelation of heart rate (HR) and rectal temperature (Tre); fall in mean skin temperature (Tsk); and change of sweating. A method of stints of exercise at room temperature followed by short heat exposures might prove an efficient method of acclimatization for large groups when time and hot spaces are wanting.

AD-783 822/0GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
METHODS OF APPROXIMATE COMPUTATION OF HUMAN ENDURANCE IN HIGH AND LOW TEMPERATURES,
V. Kirgachin. 3 Jun 74, 14p Rept no. FSTC-HT-23-222-73
Trans. from Voenno-Meditsinskii Zhurnal (USSR) n10.

Descriptors: *Performance(Human), *Heat tolerance, *Endurance(Physiology), Microclimatology, Environments, Work, High temperature, Stress(Physiology), USSR, Translations, Humidity, Low temperature, Military medicine, Clothing.
Identifiers: *Cold tolerance.

The problem of maintaining capacity for work of personnel under unfavorable exterior microclimatic conditions is beginning to acquire importance among the many problems of medically safeguarding the combat training activity of troops. When determining the degree of allowable deviation from a comfortable microclimate in a particular structure, it is necessary to take into account the character and intensity of the task being carried out by military personnel. It is not possible to give a general procedure for establishing allowable air temperature and humidity levels for all items of military technology and defense structures. However, it is possible to formulate general points of departure which may be used as guides to work out tactical and technical assignments for life support systems, to evaluate habitability conditions in existing military technology, to analyze climatic conditions of particular military operations, etc. The criteria should be a definite set of physiological indices characterizing the different stages of effort of the defense reactions of the body to extreme environments.

JPRS-62546 PC$3.25/MF$2.25
Joint Publications Research Service, Arlington, Va.
SOME GENERAL PRINCIPLES FOR STUDYING THE COMBINED EFFECT OF SPACEFLIGHT FACTORS,
B. I. Davydov, and V. V. Antipov. 23 Jul 74, 28p
Trans. of Kosmicheskie Issledovaniya (USSR) v12 n2 p285-298 Mar/Apr 74.

Descriptors: *Space flight, *Stress(Physiology), Life support, Models, Responses, Translations, USSR.

Review on combined effect of spaceflight factors covers stressors, biological effect of factors, modeling of biological effects, and predicting body response to spaceflight variants.

PB-234 347/3GA PC$3.25/MF$2.25
Jefferson Medical Coll., Philadelphia, Pa. Dept. of Physiology.
THE EFFECT OF CARBON MONOXIDE INHALATION ON INDUCED VENTRICULAR FIBRILLATION IN THE CYNOMOLOGUS MONKEY.
Final rept.,
Domenic A. DeBias. Jul 73, 37p CRC-APRAC-CAPM-4-68-4

Descriptors: *Myocardial infarction, *Carbon monoxide, Cardiovascular diseases, Monkeys, Experimental data, Pathology, Respiration, Oxygen.
Identifiers: Ventricular fibrillation, Carboxyhemoglobin.

Normal monkeys and monkeys with acutely induced myocardial infarction (MI) were immediately exposed to 100 ppm carbon monoxide for six hours and the effects of infarction and carbon monoxide inhalation, individually and in combination, on the vulnerability of the heart to ventricular fibrillation were assessed. Blood carboxyhemoglobin at the end of the six hour exposure was 9.2%. In non-infarcted, air-breathing animals, ventricular fibrillation was induced at 78.5 volts, in air-breathing infarcted animals at 50.6 volts, in non-infarcted animals exposed to CO at 30 volts. It was therefore observed that MI as well as CO inhalation were significant factors in enhancing the vulnerability of the ventricle to induced fibrillation.

PB-235 135/1GA PC$4.50/MF$2.25
Yale Univ., New Haven, Conn. School of Medicine.
STUDY OF MOTION IN THE LUMBO-SACRAL SPINE, A COMPUTER MODEL.
Final rept.,
R. V. Jones, W. J. German, G. R. Ramsby, and G. N. Sandor. Mar 72, 117p SRS-RD-01869-001
Grant SRS-RD-01869

Descriptors: *Vertebrae, *Stress(Physiology), Responses, Motion, Mathematical models, Muscuoskeletal disorders, Computer programs.

A five-year research project to understand how the spinal column functions during motion and in response to stress constructed a computerized mechanical model with detailed consideration given to the area of the lumbosacral spine. Based on data recorded and films made of 50 male volunteers performing different motions, a computer program, which included a bending scheme, was constructed. The computer model permits repeated reality. This allows for the opportunity to match a mathematical solution to a biological standard.

6T. Toxicology

PB-234 435/6GA PC$7.95/MF$2.25
Battelle Columbus Labs., Ohio.
WATER QUALITY CRITERIA DATA BOOK, VOLUME V, EFFECTS OF CHEMICALS ON AQUATIC LIFE.
Water pollution control research series,
Homer T. Kemp, Robert L. Little, Verna L. Holoman, and Ralph L. Darby. Sep 73, 538p* W74-10541, EPA-18050-HLA-09/73
Grant EPA-R-800942
Paper copy also available from GPO, PC$4.95.

Descriptors: *Water pollution, *Toxicology, *Aquatic biology, Inorganic compounds, Organic compounds, Tables(Data), Bioassay, Fishes, Biochemical oxygen demand, Industrial wastes, Indicator species, Temperature, Dissolved gases, Oxygen, Metals, Organic wastes, Pesticides, Chlorine organic compounds, Phenols, Cyanides.
Identifiers: *Water pollution effects(Animals), *Water pollution effects(Plants).

The report is an extensive compilation of data on the effects of chemicals on aquatic life which were extracted from literature published during the period 1968-1972. It is an update of an earlier report entitled 'Water Quality Criteria Data Book, Volume III, Effects of Chemicals on Aquatic Life.' The data are arranged alphabetically by chemical and are concisely represented in a columnar format which includes organism names, type of study, chemical effect, controlled parameters, significant comments on the test, and source of the data. The data were compiled using a program prepared as part of the work.

PB-234 941/3GA PC$3.75/MF$2.25
Tennessee Univ., Medical Units, Memphis. Materials Science Toxicology Labs.
METHODS FOR DETECTING THE TOXICITY OF EXTRACTED CONSTITUENTS FROM DIALYZERS.
Annual progress rept. 5 Sep 73-30 Jun 74,
John Autian, W. H. Lawrence, and E. O. Dillingham. 15 Jul 74, 51p AK-1-4-2219
Contract N01-AM-4-2219

Descriptors: *Artificial kidneys, Toxicology, Materials, Membranes, Implantation, Leaching, Dialysis.
Identifiers: *Biomaterials, *Hemodialysis.

Selected dialysis component materials and one commercial dialyzer plus tubing set were subjected to studies to evaluate the potential toxicity of the material and/or leachable substances. The data obtained are presented and the various tests are discussed.

7. CHEMISTRY

7A. Chemical Engineering

AEEW-M-1261 PC$4.00/MF$2.25
UKAEA Reactor Group, Winfrith. Atomic Energy Establishment.
DESALINATION OF SEAWATER BY THE USE OF NUCLEAR ENERGY.
F. C. Wood. Apr 74, 16p CONF-740538-1
U.S. Sales Only.

Descriptors: (*Agr type reactors, Desalination), (*Sghwr reactor, Desalination), (*Desalination, *Economics), Nuclear power plants, Planning, Uses.

For abstract, see NSA 30 05, number 14658.

PAT-APPL-443 077 PC$4.00/MF$2.25
Atomic Energy Commission, Washington, D.C.
LOW-TEMPERATURE, LOW PRESSURE HYDROGEN GETTERING.
Patent Application,
D. Richard Anderson, Robert L. Courtney, and Larry A. Harrah. Filed 15 Feb 74, 15p
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Hydrogen, *Patent applications, *Getters, Removal, Chemical engineering, Catalysts, Alkynes.
Identifiers: PAT-CL-252-184.

The patent application relates to a novel system and method for hydrogen gettering. Hydrogenation processes which include the use of catalysts such as palladium, platinum, nickel, etc., are known in the art. These processes generally employ liquids or gases and require specialized equipment for converting unsaturated organic materials to saturated organic materials. Further, depending upon the nature of the catalyst, either high temperatures or high pressures or both may be required. In some instances it is desirable to remove or getter hydrogen from atmospheres or environments wherein it is not feasible to provide for high temperatures or high pressures or to employ a fluid gettering material. It is desired to provide a novel system that does not objectionably regenerate moisture nor form pyrophoric materials upon exposure to hydrogen environment. The patent application includes coating a hydrogenation catalyst with an active unsaturated organic material. The active unsaturated organic material may be either dissolved in a suitable solvent prior to coating the hydrogenation catalyst to form a slurry. The resultant material which is the hydrogen getter may be disposed in the environment from which the hydrogen is to be removed in any desired manner.

PATENT-3 778 366 Not available NTIS
Atomic Energy Commission, Washington, D.C.
PROCESS FOR TREATMENT OF AQUEOUS SUSPENSIONS.
Patent,
Kurt A. Kraus. Filed 28 May 71, patented 11 Dec 73, 3p PAT-APPL-148 132
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Patents, *Sewage filtration, *Filtration, *Activated carbon treatment, Sewage treatment, Fluidized bed processing.
Identifiers: PAT-CL-210-23, Cross flow filtration.

The present invention relates to an improvement in clarifying aqueous suspensions by filtration or hyperfiltration. A major application for this invention lies in the treatment of aqueous sewage effluents. The invention comprises a method of treating aqueous waste streams for the purpose of removing a soluble or dispersed moiety which comprises passing said stream through a vertically disposed, porous, permeable material which contains a zone of fluidization and a solid fluidizing medium in said zone at a velocity sufficient to affect transpiration of a purified water product through said material.

PATENT-3 778 499 Not available NTIS
Atomic Energy Commission, Washington, D.C.
ATMOSPHERE PURIFICATION OF RADON AND RADON DAUGHTER ELEMENTS.
Patent,
Lawrence Stein. Filed 13 Apr 71, patented 11 Dec 73, 3p PAT-APPL-133 704
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Patents, *Radon, *Atmosphere contamination control, *Mine ventillation, Fluorination.
Identifiers: PAT-CL-423-210, Mine safety.

Radon is a heavy, radioactive gaseous element formed by the alpha disintegration of radium. The most common isotope, 222Rn, is an alpha emitter, with a half-life of 3.8 days. Radon is inherently associated with radium in uranium ores and, with its radioactive daughters, consitiutes a potential health hazard in uranium mining and ore handling operations. The daughters are solids and tend to be retained in the lungs, where they may ultimately cause cancer. The patent describes a method for purifying an atmosphere of radon and radon daughter elements by contacting the atmosphere with a fluorinating solution, whereby the radon and radon daughters are oxidized to their respective fluorides. The fluorides dissolve in the fluorinating solution and are removed from the atmosphere, which may then be recirculated.

PB-233 995/0GA PC-GPO/MF$2.25-NTIS
Pennsylvania State Univ., University Park. Coal Research Section.
PREPARATION OF MOLECULAR SIEVE MATERIALS FROM ANTHRACITE.
Interim rept. Sep 66-Jan 73,
Raman Lal Patel, and P. L. Walker, Jr. 15 Mar 73, 58p OCR-61-INT-6
Contract DI-14-01-0001-390
Paper copy available from GPO $0.50 as stock no. I63.10:61/INT6.

Descriptors: *Anthracite, *Absorbers(Materials), Coal gasification, Methane, Ion exchange resins, Adsorption, Carbon dioxide, Microporosity, Diffusion, Nitrogen, Oxygen.
Identifiers: Propane/dimethyl, *Molecular sieves, Zeolites.

This report describes the characterization of activated anthracite using the diffusion of methane at different temperatures, the effect of concentration of methane on the diffusion parameter, helium density, carbon dioxide, nitrogen and neopentane surface areas and the estimation of the diffusion length of the micropores. The results demonstrate that when a small part of the anthracite is gasified, its pore entrances can be enlarged to produce a range of effective molecular sieves. These could make possible a relatively cheap separation of important industrial gases such as oxygen and nitrogen.

PB-234 168/3GA PC$7.50/MF$2.25
FMC Corp., Princeton, N.J. Chemical Research and Development Center.
CHAR OIL ENERGY DEVELOPMENT.
Final rept. Oct 66-Jun 71,
John F. Jones, Frank H. Schoemann, John A. Hamshar, and R. Tracy Eddinger. Dec 71, 336p OCR-56
Contract DI-14-01-0001-498
See also PB-234 166.
Paper copy also available from GPO $4.00 as stock no. I63.10:56-Final.

Descriptors: *Coal gasification, *Desulfurization, Bituminous coal, Pyrolysis, Manufactured gas, Beneficiation, Coal preparation, Pilot plants, Crude oil, Hydrogenation, Electric power generation, Rotary filters, Pressure filters, Pressure filtration, Synthetic petroleum, Boiler fuels, Process charting.
Identifiers: *Coed process, Chars, *Coal liquefaction.

Design, construction, and operation of a pilot plant to carry out studies in a 100-pound-per-hour Char-Oil-Energy-Development (COED) unit are discussed along with char desulfurization. Located at Princeton, New Jersey, the pilot plant is designed to process 36 tons of coal per day and to hydrotreat 30 barrels of oil per day.

PB-234 174/1GA PC$5.75/MF$2.25
Dow Chemical Co., Walnut Creek, Calif. Western Div. Research Labs.
DEVELOPMENT OF CTA HIGH FLUX LOW OPERATING PRESSURE R.O. MODULES.
Research and development progress rept.,
E. A. McLain. Jun 74, 53p Int-OSW-RDPR-74-984
Contract DI-14-30-3054

Descriptors: *Desalting, *Cellulose acetates, *Membranes, Bracking water, Fabrication, Performance evaluation, Spinning(Extruding).
Identifiers: *Reverse osmosis desalination, *Hallow fiber membranes.

High flux cellulose triacetate hollow fibers were developed for desalting brackish water at low operating pressure. Multi-filament yarns containing uniform hollow fibers in the size range 180 microns to 250 microns O.D. and 60 microns to 90 microns I.D. were produced at spinning speeds in the range 50 to 100 feet per minute. Fibers having a flux of 3.0 GFD and a sodium chloride rejection of 85% at 150 psi on 2000 ppm NaCl feed were also produced. The desirability of using standard PVC pipe for low pressure R.O. module cases was explored. A 30,000 GPD module design was made on the basis of test results. The module contains two cartridges within 14-1/2 inch diameter, filament wound, fiber glass reinforced plastic case. The flow mode through the two cartridges is radial double pass, the saline water flowing transversely outwardly across the fibers of one cartridge and inwardly across the fibers of the other. Productivity was rated on the basis of one year's compaction. A rejection of 85% is guaranteed when the module is operated at 50% water recovery from feed containing 2000 ppm NaCl.

PB-234 184/0GA PC$7.00/MF$2.25
Ionics, Inc., Watertown, Mass.
HIGH TEMPERATURE ELECTRODIALYSIS. PHASE V.
Research and development progress rept.,
F. B. Leitz, M. A. Accomazzo, H. I. Viklung, and A. D. Jha. Jun 74, 80p Int-OSW-RDPR-74-985
Contract DI-14-30-3084
See also PB-227 280.

Descriptors: *Desalting, Materials, Performance evaluation, Cost estimates, Design, Sea water, Fabrication, Process charting, Tests, Cells, Capitalized costs, Operating costs, Engineering drawings, Membranes, Spacers.
Identifiers: *Electrodialysis desalination, High temperature.

The overall objective of this program is the development of improved electrodialysis technology for water desalination. This phase has specifically dealt with manufacture and shop testing of two stages each of which consisted of 130 cell pairs of the new components. Further refinements were made in the economic evaluation of such components for desalination of sea water. With reasonable assumptions of economic parameters, total desalination costs are estimated to be 16 to 24 cents per cu m (60 to 90 cents per 1000 gals.).

PB-234 386/1GA PC$8.00/MF$2.25
Avco Corp., Lowell, Mass. Avco Space Systems Div.
AVCO ARC-COAL PROCESS. FEASIBILITY REPORT.
Interim rept. 16 May 66-1 Apr 68 on phase 1.
Aug 68, 100p OCR-34
Contract DI-14-01-0001-493

Descriptors: *Coal gasification, *Acetylene, *Electric arc furnaces, *Manufactured gas, Chemical industry, Feasibility, Anodes, Design, Hydrogenation.

This feasibility report describes experimental work and engineering feasibility studies of a process being developed by Avco for the production of acetylene by the electric-arc treatment of coal. The report covers in some detail the various equipment configurations developed, experimental results (including acetylene yields and power consumption) plus engineering cost studies of conceptual commercial-scale plants. Additionally it includes projections of the future acetylene market. The general conclusion is that results to date indicate that the process could produce acetylene at competitive prices and that reasonably expected future improvements in the process could open a large new market for acetylene as a raw material for plastic manufacturing.

PB-234 414/1GA PC$4.25/MF$2.25
University of Southern California, Los Angeles. Dept. of Electrical Engineering.
NONLINEAR BOUNDARY VALUE PROBLEMS AND MULTICOMPONENT DISTILLATION.
Technical rept.,
E. Stanley Lee, and Paul Lee. Jun 73, 24p USC-113P-57, RB73-24
Contract AT(04-3)-113, Grant NSF-GK-26212
Sponsored in part by Grant NSF-GP-29049 and Grant PHS-GM-16197.

Descriptors: *Distillation, *Boundary value problems, *Nonlinear differential equations, Computation, Nonlinear algebraic equations, Difference equations.
Identifiers: NTISNSF.

Multicomponent distillation is essentially a nonlinear boundary value problem in difference equations. Different computational approaches can be developed based on the choice of different parameters as the unknown variables, different stages as the initial stage, and different methods to solve the difference equations. In this work, these different aspects are explored. One particular interesting approach is to choose the (m-1) liquid phase concentrations and total liquid molal rate as the unknowns, where m is the number of components in the system. This approach results in a system of nonlinear simultaneous mixed difference and algebraic equations and presents some interesting computational problems.

PB-234 474/5GA PC$4.50/MF$2.25
University of Southern California, Los Angeles. Dept. of Electrical Engineering.
INVARIANT IMBEDDING, ITERATIVE LINEARIZATION, AND MULTISTAGE COUNTERCURRENT PROCESSES. IV. A NEW APPROACH TO DISTILLATION COLUMN CALCULATION.
Technical rept.,
E. Stanley Lee, and Paul Lee. Jun 73, 28p RB73-25
Grants NSF-GK-26212, NSF-GP-29049
See also PB-229 287.

Descriptors: *Distillation, *Columns(Process engineering), Algorithms, Design, Flow rate, Partial differential equations, Numerical integration, Boundary value problems, Nonlinear differential equations.
Identifiers: Countercurrent flow, Quasilinearization, Invariant imbedding.

By treating the multicomponent distillation column as a nonlinear boundary value problem in difference equations, various different computational algorithms can be developed. Some of the typical algorithms are discussed and used to solve some examples. It is shown that this basic concept combined with quasilinearization form a powerful approach for solving multicomponent distillation column design problems.

PB-234 475/2GA PC$4.50/MF$2.25
University of Southern California, Los Angeles. Dept. of Electrical Engineering.
INVARIANT IMBEDDING, ITERATIVE LINEARIZATION AND MULTISTAGE COUNTERCURRENT PROCESSES. VII. DISTILLATION COLUMN AT MINIMUM REFLUX AND NONLINEAR BOUNDARY VALUE PROBLEMS.
Technical rept.,
E. Stanley Lee. Jun 73, 26p USC-113P-68, RB73-41
Grants PHS-GM-16197, NSF-GP-29049
Sponsored in part by Atomic Energy Commission, Washington, D.C., Contract AT(04-3)-113. See also PB-225 098.

Descriptors: *Distillation, *Columns(Process engineering), Boundary value problems, Design, Partial differential equations, Algorithms, Numerical integration, Nonlinear differential equations.
Identifiers: Invariant imbedding, Quasilinearization.

The concept of treating multicomponent distillation problems as nonlinear boundary value problems in difference equations is used to solve columns at minimum reflux. Various computational algorithms are formulated based on the choice of different unknown variables and different boundary conditions. To show the quadratic convergence some typical algorithms are illustrated by numerical examples. It is shown that using very rough initial approximations or starting values, four to five digit accuracy is obtained in five to seven iterations.

PB-234 476/0GA PC$3.75/MF$2.25
Williams (S. K.) Co., Wauwatosa, Wis.
WASTE WATER TREATMENT AND REUSE IN A METAL FINISHING JOB SHOP.
Environmental protection technology series.
Jul 74, 68p* EPA-670/2-74-042

Descriptors: *Industrial waste treatment, *Electroplating, *Precipitation(Chemistry), *Metal finishing, Chromates, Cyanides, Chromium, Nickel, Copper, Sludge, Metal cleaning, Rinsing, Industrial plants, Cost estimates, Anodizing, Chemical removable(Water treatment), Solid waste disposal, Oxidation, Reduction(Chemistry), Expenses, Capitalized costs, Operating costs.
Identifiers: *Water pollution control.

A complete waste water treatment system has been installed as part of the new S. K. Williams Company job plating facility, to make the effluent suitable for discharge. Most of the metal finishing processes common to the industry are included in the plant. Five integrated waste treatment systems, each designed for a specific type of waste compound (cyanides, nickel, copper, chromates, and chromium), are used to protect the rinse waters from contamination by process solution drag-out. A batch-type treatment system handles miscellaneous and intermittent discharges. The system design aims for a minimum volume of sludge production and a unique and economical sludge dewatering technique is included. Improved rinsing efficiency is achieved through the use of the integrated chemical rinses, thus permitting the plant to operate on a minimum water supply. Chemical reaction efficiency was considered in the design of each phase of the treatment system. Data is presented on the operating and capital costs for the entire system and operating experiences are described. (Modified author abstract)

PB-234 549/4GA PC$5.00/MF$2.25
Pennsylvania State Univ., University Park. Inst. for Research on Land and Water Resources.
NEUTRALIZATION OF ACIDIC WASTES BY CRUSHED LIMESTONE.
Frank H. Pearson, and Archie J. McDonnell. Jun 74, 164p Research Pub-79 W74-10694, OWRR-A-030-PA(1)
Contract DI-14-31-0001-3838

Descriptors: *Neutralizing, *Limestone, *Acidty, Hydraulics, pH, Alkalinity, Experimental data, Reaction kinetics, Mathematical models, Crushed stone, Surface chemistry, Turbulence, Temperature, Industrial waste treatment, Surfaces, Computerized simulation, Computer programs, Mine waters.
Identifiers: *Mine acid drainage, Ionic strength.

Experiments conducted to determine the reactivity of crushed limestone in acidic water were designed primarily to simulate the neutralization of acidic streams by barriers of crushed limestone, although the results obtained appear to be more widely applicable. Acidified water, at pH values ranging from 2 to 7, was circulated over crushed limestone in the size range 2-1/2 to 4 inches. Water samples were withdrawn periodically for determination of alkalinity and acidity, from which the kinetics of the two slower chemical reactions that limit the overall process could be determined. These are the reaction between hydrogen ions and solid calcium carbonate, and the exsolution of carbon dioxide. For each of these reactions the dependence of the rate constant on temperature, ionic strength, and water turbulence was established. Two linked differential equations were derived, and solved simultaneously to obtain a description of the neutralization process.

PB-234 551/0GA PC$4.50/MF$2.25
Pennsylvania State Univ., University Park. Inst. for Research on Land and Water Resources.
EVALUATION OF PROTOTYPE CRUSHED LIMESTONE BARRIERS FOR THE NEUTRALIZATION OF ACIDIC STREAMS,
Frank H. Pearson, and Archie J. McDonnell. Jun 74, 104p Research Pub-80 W74-10693, OWRR-A-030-PA(2)
Contract DI-14-31-0001-3838

Descriptors: *Neutralizing, *Industrial waste treatment, *Limestone, Design, Mathematical models, Reaction kinetics, Barriers, Acidity, Hydraulics, Performance evaluation, Fluid flow, Crushed stone, pH, Computer programs, Computerized simulation, Water quality, Prototypes, Mine waters.
Identifiers: *Water pollution control, *Mine acid drainage.

At four prototype limestone barriers that had been constructed to neutralize acidic streams, water samples were taken for analysis, and measurements were made to determine the effect of each installation on water quality. It was demonstrated that limestone barriers are capable of renovating acidic streams to the point that normal aquatic life can be restored, rendering the stream water suitable for a number of uses that are otherwise precluded. A mathematical model of limestone barriers was constructed, based on hydraulic laws and on the chemical kinetics of the rate-limiting reactions between crushed limestone and acidic water. A simple design procedure was developed to rapidly determine the quantity of crushed limestone required to neutralize a given streamflow to any required degree, the rate of consumption of limestone in the acidic water, and the conditions for avoiding either washout of the barrier in floods, or clogging of the limestone by sediment. (Modified author abstract)

7B. Inorganic Chemistry

AD-783 946/7GA PC$3.00/MF$2.25
Pennwalt Corp King of Prussia Pa Research and Development Dept
INORGANIC COORDINATION POLYMERS. XVII. THE PREPARATION AND PROPERTIES OF TANTALUM(V) DIPHENYLPHOSPHINATES.
Technical rept.,
Hyman D. Gillman. Aug 74, 18p Rept no. TR-12
Contract N00014-69-C-0122

Descriptors: *Metal complexes, *Tantalum compounds, *Phosphinates, *Inorganic polymers, Molecular structure, Ligands, Chemical bonds, Thermal stability, Infrared spectra, Thermogravimetric analysis, Solutions(Mixtures).

Tantalum diphenylphosphinate alkoxides and oxides were prepared with one, two, and three diphenylphosphinate groups per tantalum. They were found to be low molecular weight polymers in solution. The infrared spectra of the tantalum diphenylphosphinate oxides indicate that the phosphinate groups have predominately one mode of coordination (probably symmetrical bridging) in Ta(OP(C6H5)2O)O2-H2O, whereas in Ta(OP(C6H5)2O)2O3/2-XH2O and Ta(OP(C6H5)2O)3O-XH2O they have a variety of coordination modes. The thermal stabilities of tantalum diphenylphosphinate dioxide and tantalum bis(diphenylphosphinate) sesquioxide were considerably greater than tantalum tris(diphenylphosphinate) oxide. (Author)

COM-74-50693/2GA Not available NTIS
National Bureau of Standards, Washington, D.C.
PYROLYSIS GENERATION OF DILUTE CONCENTRATION OF SULFUR DIOXIDE.
Final rept.,
Douglas Cornell, and Wing Tsang. Jun 74, 3p
Pub. in Analytical Chemistry, v46 n7 p933-935 Jun 74.

Descriptors: *Gas generators, *Sulfur dioxide, Sulfones, Pyrolysis, Calibration, Gas analysis, Monitors.
Identifiers: *Air pollution monitoring.

SO2 has been produced in dilute concentrations by pyrolysis of trimethylene sulfone. The decomposition is unimolecular and yields equimolar amounts of SO2 and C3 hydrocarbons. Advantages of the method for use in calibration of SO2 monitors in routine field analytical determinations are discussed.

COM-74-50720/3GA Not available NTIS
National Bureau of Standards, Washington, D.C.
FLUX SYNTHESIS OF CUBIC POTASSIUM ANTIMONATE.
Final rept.,
W. S. Brower, D. B. Minor, H. S. Parker, R. S. Roth, and J. L. Waring. 1974, 8p
Pub. in Materials Research Bulletin, v9 n8 p1045-1051 1974.

Descriptors: *Antimonates, Single crystals, Crystal structure, Synthesis(Chemistry), Potassium inorganic compounds, Antimony oxides.
Identifiers: *Potassium antimonates.

Although the compound KSbO3 has been reported to occur in a high temperature cubic polymorph, only the rhombohedral ilmenite phase was obtained in this study for pure material at ambient pressure and temperatures up to about 1350C in open Pt crucibles or sealed Pt tubes. With the addition of about 2 mole percent SiO2, B2O3 or other oxides of small cations a primitive cubic phase was found. Small single crystals of a body centered cubic phase were easily synthesized by a flux evaporation technique at about 1000C in an open Pt crucible from a composition of about 5 mole % Sb2O4:95 mole % KF. The exact composition and structure of this phase is now under investigation.

PATENT-3 776 697 Not available NTIS
Atomic Energy Commission, Washington, D.C.
METHOD AND REAGENT FOR DETERMINING NITROGEN OXIDES.
Patent,
Richard W. Crawford, Lester P. Rigdon, and Richard J. Thompson. Filed 13 Apr 72, patented 4 Dec 73, 5p PAT-APPL-243 877
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Gas analysis, *Nitrogen oxides, *Patents, Osmium oxides, Xenon compounds, Nitrites, Colorimetric analysis, Air pollution.
Identifiers: PAT-CL-23-232-R, Hochheiser solution, Saltzman analysis, *Air pollution detection.

The invention relates, generally, to the determination of nitrogen oxides in gaseous atmospheres and, more particularly, to such a determination wherein more complete and accurate absorption of nitrogen dioxide is effected by means of a Hochheiser reagent containing small amounts of OsO4, XeO3 or perxenate. A general object of the invention is to provide a procedure using an improved dilute alkaline reagent for more accurately determining nitrogen dioxide content of a gaseous material.

PATENT-3 778 500 Not available NTIS
Atomic Energy Commission, Washington, D.C.
METHOD OF PRODUCING NAF.2UF4.
Patent,
Gifford G. Briggs. Filed 23 May 72, patented 11 Dec 73, 5p PAT-APPL-256 065
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C.

Descriptors: *Patents, *Uranium fluorides, Synthesis(Chemistry), Inorganic salts.
Identifiers: PAT-CL-423-253.

It is an object of this invention to provide a process for producing uranium metal from a starting solution of uranyl nitrate or uranyl chloride whereby no processing step prior to final bomb reduction requires either temperatures exceeding approximately 230F. or the use of anhydrous HF. It is a further object to provide a process wherein the double salt of NaF and UF4 containing the lowest ratio of sodium to uranium is produced.

PB-234 326/7GA PC$5.00/MF$2.25
Stanford Research Inst., Menlo Park, Calif.

SURVEY OF MANUAL METHODS OF MEASUREMENTS OF ASBESTOS, BERYLLIUM, LEAD CADMIUM, SELENIUM, AND MERCURY IN STATIONARY SOURCE EMISSIONS.
Final rept. 29 Jun 71-30 Sep 73,
D. M. Coulson, D. L. Haynes, M. E. Balazs, and M. P. Dolder. Sep 73, 162p* SRI-PYU-1374-FR
EPA-650/4-74-015
Contract EPA-68-02-0310

Descriptors: *Asbestos, *Beryllium, *Lead(Metal), *Cadmium, *Selenium, *Mercury(Metal), *Chemical analysis, Spectroscopic analysis, Trace elements, Gas analysis, Reviews, Gas sampling, Particles, Electron microscopy, Filters, Performance evaluation, Chelating agents, Organometallic compounds, Spectrophotometry, Exhaust emissions, Flue gases.
Identifiers: *Air pollution detection, Atomic absorption spectroscopy.

Sources of information were searched for methods of analysis for asbestos, beryllium, lead, cadmium, selenium, and mercury that would be suitable for analyzing stationary source emissions. Methods of analysis were then chosen on the basis of a survey of current knowledge on methodology, ease of using the procedure, availability of the equipment needed to perform the tests, sensivitity based upon proposed EPA standards of emission and threshold limit values (TLV), and specificity requirements. One method was chosen for each pollutant. A detailed discussion of how the methods of analysis were selected is presented. These methods of analysis are presented in Appendix 2. Some laboratory and field testing was performed for methods of analysis that required modification of existing methods. The methods of analysis selected in Phase I were tested, evaluated, and then modified if necessary. (Modified author abstract)

TT-73-54067 PC$3.00
Department of Agriculture, Washington, D.C.
DETERMINATION OF MICROGRAM AMOUNTS OF ARSENIC IN FOOD AND ARTICLES OF DAILY USE (OZNACZANIE MIKROGRAMOWYCH ZAWARTOSCI ARSENU W ZYWNOSCI I PRZEDMIOTACH UZYTIKU),
J. Szymczak, and A. Zechalko. 1974, 13p
Trans. of Roczniki Panstwowego Zakladu Higieny (Poland) v14 n3 p239-244 1963, by A. Skup. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Arsenic, *Colorimetric analysis, Chemical analysis, Chemical tests, Optical measurement, Toxicology, Reduction(Chemistry), Poland, Translations, Silver organic compounds, Complex compounds, Carbamates.
Identifiers: Silver/diethyldithiocarbamato.

A colorimetric method for the determination of microgram amounts of arsenic has been developed. It is based on measurements of the absorbance of a color complex produced with silver diethyldithiocarbamate in pyridine solution. After wet combustion of a food sample, the arsenic compounds in the solution are reduced with zinc to AsH3, which is then made to form the complex with the carbamate. Some products can be analyzed without previous wet combustion.

7C. Organic Chemistry

AD-783 496/3GA PC$3.25/MF$2.25
Army Natick Labs Mass Clothing and Personal Life Support Equipment Lab
POLYAMIDES AND POLYSULFONAMIDES FROM HEXAHYDROBENZODIPYRROLE.
Technical rept.,
Namassivaya Doddi. Apr 74, 35p* Rept no. C/PLSEL-122 USA-NLABS-TR-74-32-CE

Descriptors: *Polyamide plastics, *Sulfonamides, *Heat resistant plastics, Nitrogen heterocyclic compounds, Condensation reactions, Polymerization, Pyrroles, Viscosity, Thermogravimetric analysis, Photolysis, Oxidation, Thermal stability, Melting point, Synthesis(Chemistry), Molecular structure, Molecular weight.
Identifiers: Benzodipyrrole/hexahydro, Acyl halides, Differential scanning calorimetry, Poly((benzodipyrroledi yl/hexahydro)-carbonyl-phenylene-carbonyl), Poly((benzodipyrroledi yl/hexahydro)-carbonyl-tetramethylene-carbonyl), Poly((benzodipyrroledi yl/hexahydro)-carbonyl-octamethylene-carbonyl), Poly((benzodipyrroledi yl/hexahydro)-carbonyl-phenylene-oxy-phenylene-carbonyl), Poly((benzodipyrroledi yl/hexahydro)-sulfonyl-phenylene-sulfonyl).

A series of polyamides was synthesized by the interfacial polycondensation of 1,2,3,5,6,7-hexahydrobenzo(1,2-c:4,5-c') dipyrrole with isophthalic, terephthalic, oxydibenzoic, sebasic and adipic acid chlorides. High molecular weight polymers with inherent viscosities ranging from 0.4 to 3.6/dl were obtained. These polyamides melt between 350C and 475C depending on structural differences as determined by differential scanning calorimetry. Rapid weight loss in these polymers was observed in the range of 350 - 400C under thermogravimetric analysis in a nitrogen atmosphere. All these polyamides are susceptible to photo-oxidative degradation. In addition, polysulfonamides were also prepared from hexahydrobenzo-dipyrrole with m-benzene, biphenyl and p,p'-oxydibenzenesulfonyl chloride by interfacial polycondensation and by solution polycondensation with (p,p'-oxydibenzenesulfonyl chloride). The polysulfonamides are considerably lower molecular weight and are less stable than the corresponding polyamides. (Modified author abstract)

AD-783 499/7GA PC$5.00/MF$2.25
Frankford Arsenal Philadelphia Pa
ROLE OF DIPHENYLAMINE AS A STABILIZER IN PROPELLANTS; ANALYTICAL CHEMISTRY OF DIPHENYLAMINE IN PROPELLANTS (A SURVEY REPORT).
Test rept.,
Julius B. Apatoff, and George Norwitz. Dec 73, 38p Rept no. FA-T73-12-1

Descriptors: *Nitrocellulose, *Decomposition, Chemical analysis, Stability, Propellants, Amines, Aromatic compounds.
Identifiers: *Diphenylamine, *Stabilizers(Agents).

A comprehensive survey was made of the use of diphenylamine as a stabilizer in propellants. Various schemes that have been proposed for the degradation of diphenylamine in propellants to about 17 nitration products are described in detail. The effectiveness of the different degradation products to continue to act as stabilizers is discussed. The methods of analysis that have been proposed for the determination of diphenylamine and its degradation products in propellants and the status of the military requirements for such determinations are discussed. (Author)

AD-783 562/2GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
POLYBENZIMIDAZOLOXAZOLES - A NEW CLASS OF THERMORESISTANT COPOLYMERS,
V. V. Korshak, A. A. Izneev, A. M. Kuznetsov, V. V. Mikulenko, and G. F. Slezko. 27 Jun 74, 12p Rept no. FTD-MT-24-1311-74
Edited machine trans. of Buryatskii Institut Estestvennykh Nauk, Ulan-Ude. Trudy (USSR) n10 p87-95 1971, by James R. Moore.

Descriptors: *Heat resistant plastics, *Copolymerization, Condensation reactions, Aromatic compounds, Synthesis(Chemistry), Molecular structure, Heterocyclic compounds, Amines, USSR, Translations.
Identifiers: *Copolymers, Polybenzimidazoles, *Polybenzimidozoloxazoles, Arylamines.

A new class of copolymers is reported - polybenzimidazoloxazoles. Some laws governing the obtaining of mixed copolymers are studied, some properties of the polymers are investigated. It is shown that the obtained polymers are very thermostable materials.

AD-783 678/6GA PC$3.25/MF$2.25
California Univ Los Angeles Dept of Chemistry
CARBORANES AND METALLOCARBORANES.
Technical rept.,
Kenneth P. Callahan, William J. Evans, and M. Frederick Hawthorne. 12 Jun 74, 32p Rept no. TR-72
Contract N00014-69-A-0200-4019

Descriptors: *Carboranes, *Transition metal compounds, *Elimination reactions, *Addition reactions, Metalorganic compounds, Chemical reactions.
Identifiers: *Metallocarboranes, *Rearrangement reactions.

One of the most significant developments in modern boron chemistry was the discovery of the carboranes. The substitution of CH(3+) vertices for BH(2+) units in boron hydride polyhedra opened up an entire new field of chemical endeavor. Chemical investigations of the carboranes uncovered yet another area of boron chemistry, that of metallocarboranes. The chemistry of these species, which contain transitional metal vertices incorporated into the polyhedral framework, is just beginning to be elucidated. Several reactions common in carborane chemistry have recently been found to be generally applicable to metallocarboranes. These reactions (including rearrangement, contraction (elimination), and expansion) and the significance of the chemical similarity of these two types of heteroboranes are discussed. (Modified author abstract)

AD-783 686/9GA PC$3.00/MF$2.25
Naval Ordnance Lab White Oak Md
FLUORONITROALIPHATIC CHEMISTRY - SYNTHESIS AND THERMAL STABILITY OF SOME NEW DERIVATIVES OF 2,2,2-DIFLUORONITROETHANOL.
Final rept.,
Horst G. Adolph. 17 May 74, 16p Rept no. NOLTR-74-94

Descriptors: *Fluorohydrocarbons, Binders, Thermal stability, Synthesis(Chemistry), Chemical reactions, Organic nitrogen compounds, Phosphates, Acetates, Triazines.
Identifiers: Ethanol/difluoro-nitro, *Nitro compounds, Alcoholates.

Five new derivatives of 2,2,2-difluoronitroethanol have been prepared; some of their physical properties are reported. A procedure for the preparation of difluoronitroethanol by decarboxylation of difluoronitroacetate anion in the presence of formaldehyde is described. (Author)

AD-783 906/1GA PC$3.25/MF$2.25
Washington Univ Seattle Dept of Chemistry
RING-OPENING AND ISOMERIZATION OF A SERIES OF CHEMICALLY ACTIVATED CYCLOALKYL RADICALS.
Technical rept.,
B. S. Rabinovitch. 20 Aug 74, 37p Rept no. TR-3
Contract N00014-67-A-0103-0035

Descriptors: *Free radicals, *Cycloalkanes, Elimination reactions, Cycloalkenes, Excitation, Chemical reactions, Molecular isomerism.
Identifiers: *Isomerization, *Rearrangement reactions.

Unimolecular reactions of a series of chemically activated cycloalkyl radicals, vibrationally excited to the region of about 45 kcal/mole, were studied in the gas phase. Cyclopropylethyl, cyclobutyl, cyclopentyl, and cyclohexyl radicals were produced by H-atom addition to the appropriate

olefin. Straight chain ring-opened products were observed for the first three of these radicals, while cyclopentylmethyl radical was the major product of the fourth. Critical threshold energies for these reactions have been deduced. Ring strain is discussed. (Modified author abstract)

AD-783 937/6GA PC$3.00/MF$2.25
Morris Brown Coll Atlanta Ga Dept of Chemistry
19F CHEMICAL SHIFTS AND INFRARED C-F STRETCHING FREQUENCIES FOR BRIDGEHEAD FLUORIDES.
Technical rept.,
G. L. Anderson. 5 Aug 74, 22p Rept no. TR-1
Grant Nonr(G)-00021-73

Descriptors: *Polycyclic compounds, *Fluorohydrocarbons, *Infrared spectra, Synthesis(Chemistry), Molecular vibration, Chemical structure, Nuclear magnetic resonance.
Identifiers: *Nuclear magnetic resonance(Fluorine 19), *Chemical shifts(Nuclear magnetic resonance), Adamantanes, Bicyclo(2-2-2)octanes.

Several 3-substituted-1-fluoroadamantanes and 4-substituted-1-fluorobicyclo (2.2.2) octanes have been synthesized. The 19F chemical shifts and C-F stretching frequencies for these bridgehead fluorides have been measured. The 19F substituent chemical shifts (SCS) extended the previously reported correlation of anomalous substituent effects on 19F chemical shifts of bridgehead fluorides. These 19F chemical shifts are incompatible with both theoretical and experimental explanations for proton chemical shifts, where comparable. The C-F stretching frequencies shifts (SFS) are anomalous when compared to the corresponding C-H data. Limited experimental data preclude a meaningful explanation at this time. (Author)

COM-74-50692/4GA Not available NTIS
National Bureau of Standards, Washington, D.C.
DIRECT RATE MEASUREMENTS SHOWING NEGATIVE TEMPERATURE DEPENDENCE FOR REACTION OF ATOMIC OXYGEN WITH CIS-2-BUTENE AND TETRAMETHYLETHYLENE.
Final rept.,
D. D. Davis, R. E. Huie, and J. T. Herron. 15 Jul 73, 7p
Pub. in Jnl. of Chemical Physics, v59 n2 p628-634, 15 Jul 73.

Descriptors: *Butenes, Hexenes, Reaction kinetics, Temperature, Ground state, Chemical reactions.
Identifiers: *Oxygen atoms, Chemical reaction mechanisms, Butene/dimethyl.

Reported in this paper are the first direct rate measurements showing a negative temperature dependence for the reaction of ground state atomic oxygen with cis-2-butene and tetramethylethylene. Wide variations made in the experimental conditions (e.g., total pressure, O atom concentration, and olefin concentration) of these two systems have shown that the measured rate constants were uninfluenced by secondary reactions. The absence of any dependence of the measured rate constants on total pressure at several temperatures indicate that the reactions investigated were bimolecular processes. These new results are discussed in terms of both collision and transition state theories.

COM-74-50714/6GA Not available NTIS
National Bureau of Standards, Washington, D.C.
MICROWAVE SPECTRUM, STRUCTURE, AND DIPOLE MOMENT OF ETHYNYLDIFLUOROBORANE, HCCBF2.
Final rept.,
W. J. Lafferty, and J. J. Ritter. 1969, 3p
Pub. in Chemical Communications, 1969, p 909-910.

Descriptors: *Microwave spectra, Molecular structure, Dipole moments.
Identifiers: *Borane/difluoro-ethynyl.

The microwave spectrum of enthynyldifluoroborane was studied in the 18 - 33 GHz region. The molecule has been determined to have C(2v) symmetry and estimates can be made for the C-B bond distance and the FBF angle. The dipole moment of the molecule was found.

COM-74-50716/1GA Not available NTIS
National Bureau of Standards, Washington, D.C.
CARBON-13 AND PROTON NUCLEAR MAGNETIC RESONANCE OBSERVATIONS OF THE CONFORMATION OF POLY(L-PROLINE) IN AQUEOUS SALT SOLUTIONS.
Final rept.,
Douglas E. Dorman, Dennis A. Torchia, and Frank A. Bovey. Feb 73, 3p
Pub. in Macromolecules, v6 n1 p80-82 Jan/Feb 73.

Descriptors: *Isomerization, *Polypeptides, Inorganic salts, Molecular isomerism, Solutions, Chemical bonds, Nuclear magnetic resonance.
Identifiers: Nuclear magnetic resonance(Carbon 13), *Prolines, Polyprolines.

Proton nmr at 220 MHz and 13C nmr at 25 and 15.08 MHz have been employed to confirm previous conclusions that the disordering of poly(L-proline) chains in concentrated aqueous salt solutions arises primarily from the formation of random sequences of cis and trans peptide bonds. The effects of KI and CaCl2 are essentially similar. The beta and gamma carbon resonances of the proline ring appear to be the most reliable monitors of this isomerization process, giving distinct and well resolved peaks for the cis and trans conformations.

COO-3151-34 PC$6.25/MF$2.25
Cornell Univ., Ithaca, N.Y. Lab. of Atomic and Solid State Physics.
FAR INFRARED PROPERTIES OF POLYAMINO ACIDS. REPORT NO. 2146.
W. J. Shotts, and A. J. Sievers. Dec 73, 61p

Descriptors: (*Amino acids, *Absorption spectra), Crystal structure, Far infrared radiation, Line broadening, Polymers, Temperature dependence.

For abstract, see NSA 30 04, number 12098.

ORO-3018-115 PC$13.25/MF$2.25
Louisiana State Univ., Baton Rouge.
PHOTOELECTRON SPECTROSCOPY OF CARBONYLS.
J. L. Meeks. May 74, 202p

Descriptors: (*Carbonyls, *Photoelectron spectroscopy), Electrons, Ionization, Molecules.

For abstract, see NSA 30 04, number 12101.

PATENT-3 776 958 Not available NTIS
Atomic Energy Commission, Washington, D.C.
NITRODIFLUORAMINO POLYAROMATIC COMPOUNDS,
Patent,
Marion E. Hill, and Michael W. Lerom. Filed 18 Apr 72, patented 4 Dec 73, 4p PAT-APPL-245 186
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Patents, *Nitro compounds, *Explosives, *Fluoroamines, Fluorine organic compounds, Synthesis(Chemistry).
Identifiers: PAT-CL-260-576.

The present invention relates generally to processes for producing nitrated polyaromatic hydrocarbons having difluoramino substituents therein and, more particularly, to processes for producing compounds containing a pair of trinitrophenyl groups joined by certain linkages, at least one of which phenyl groups is provided with a difluoramine substituent. It also relates to novel products produced thereby which are appropriately sensitized and have other properties especially useful in an exploding bridgewire (EBW) detonation system.

PB-234 926/4GA PC$3.00/MF$2.25
Bureau of Reclamation, Denver, Colo. Engineering and Research Center.
FIELD EVALUATION OF A METHOD TO DETECT ACROLEIN IN IRRIGATION CANALS,
D. M. Hopkins, and A. R. Hattrup. Jun 74, 15p
REC-ERC-74-8

Descriptors: *Acroleins, *Water analysis, Field tests, Irrigation canals, Herbicides, Weed control, Fluorescence.
Identifiers: *Water pollution detection, *Fluorometric analysis.

A method for quantitatively determining levels of acrolein when used as a herbicide to suppress aquatic weed growth in irrigation distribution systems was field evaluated on the Columbia Basin Project during the summer of 1972. Samples of treated irrigation water were taken, ice cooled, and examined by fluorometric analysis during the same day. Standards were prepared using untreated irrigation water taken from above the herbicide application points of the canals being studied. Acrolein application concentrations ranged between 0.1 to 2.0 ppm. Water samples were taken from canal segments as long as 64.5 miles, and acrolein concentrations as low as 0.02 ppm were detected.

TT-73-56010 PC$3.00/MF$2.25
Department of Commerce, Washington, D.C.
PREPARATION OF CHROMATOGRAPHICALLY PURE (+) 12-ACETOXY-CIS-9-OCTADECENE-1-OL (GYPLURE) (PROUCAVANJE I DOBIVANJE HROMATOGRAFSKI CISTOG (+) 12-ACETOKSI-CIS-9-OKTADECEN-1-OLA (GYPLUREA)),
D. Stefanovic, B. Grujic-Injac, and D. Micic. 1974, 18p
Trans. of Srpsa Akademija Nauka i Umetnosti, Belgrade. Odeljenje Prirodno-Matematickih Nauka. Glasa (Yugoslavia) v262 n27 1965, by Lazar Stanojevic. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Acyclic alcohols, *Insect control, Acetates, Thin layer chromatography, Gas chromatography, Synthesis(Chemistry), Yugoslavia, Translations.
Identifiers: Attractants, *Octadecene diol/acetate, Gypsy moths.

By the reduction of ricinoleic acid (derived from castor oil), the authors obtained (+) 12-acetoxy-cis-9-octadecene-1-ol. The monoacetate obtained in this proved to be biologically inactive; gas chromatography showed that it contained 5 more components (54.34%) as impurities. Thin layer chromatography on silica gel and on a silica gel column produced the chromatographically pure ricinoleyl monoacetate ((+) 12-acetoxy-cis-9-octadecene-1-ol), termed gyplure by Jacobson and coworkers, who asserted that it is biologically active and that it attracts gypsy moth (Limantria dispar L.) males. Biological tests demonstrated that even the chromatographically pure (+) 12-acetoxy-cis-9-octadecene-1-ol had only a minimal biological activity in concentrations of 0.1 to 0.02, and is not effective as a synthetic sex lure for the control of gypsy moth populations in woods.

7D. Physical Chemistry

AD-783 527/5GA PC$4.00/MF$2.25
Naval Postgraduate School Monterey Calif
GAS PROPERTIES COMPUTATIONAL PROCEDURE SUITABLE FOR ELECTRONIC CALCULATORS.
Technical rept.,

J. R. Andrews, and O. Biblarz. 1 Jul 74, 88p Rept no. NPS-57ZI74071A

Descriptors: *Gases, *Thermodynamics, *Transport properties, *Data reduction, Polynomials, Temperature, Pressure, Mathematical models, Computations, Correlation techniques, Enthalpy, Entropy, Thermal conductivity, Viscosity, Specific heat, Algorithms.

A calculating procedure is presented, based on a least squares polynomial approximation, for duplicating existing tabular values of selected thermodynamic and transport properties of various important gases. Most of the data refer to ideal gases; however, for functions of both temperature and pressure, the pressure has been specified such that the polynomial approximations have only temperature as the independent variable. Suggested algorithms for polynomial evaluations up to the sixth degree are presented and optimized for hand-held or desk top calculators. Using the suggested polynomial fits and a suitable calculator, it is possible to duplicate existing table values for the various functions of the selected gases without interpolation or reference to the tables per se. The error of the included fits its generally less than 0.5%. (Modified author abstract)

AD-783 543/2GA PC$3.00/MF$2.25
Utah Univ Salt Lake City Dept of Chemistry
OBSERVATION OF THE KRISHNAN EFFECT IN CHOLESTERYL MYRISTATE.
Technical rept.,
C. H. Wang, and Y. Y. Huang. 6 Aug 74, 19p Rept no. TR-6
Contract N00014-67-A-0325-0007
Presented at the International Liquid Crystal Conference (5th), Stockholm, 1947.

Descriptors: *Rayleigh scattering, Phase transformations, Depolarization, Liquid crystals, Isotropism.
Identifiers: *Krishnan effect, Myristic acid/(cholesteryl-ester).

Using the 90 degree scattering geometry, the authors have measured the intensity of four light scattering components, V(v), V(h), H(v) and H(h) in cholesteryl myristate by cooling it from the isotropic liquid to the solid phase. The Krishnan effect is observed in the isotropic liquid as well as in the temperature below the isotropic liquid-mesophase transition temperature. (Modified author abstract)

AD-783 551/5GA PC$3.00/MF$2.25
Purdue Univ Lafayette Ind Project Squid Headquarters
A FREE JET STUDY OF THE ROTATIONAL RELAXATION OF MOLECULAR NITROGEN FROM 300-1000K.
Technical rept.,
Robert J. Gallager, and John B. Fenn. Jun 74, 18p Rept no. SQUID-TR-YALE-5-PU
Contract N00014-67-A-0226-0005
Prepared in cooperation with Yale Univ., New Haven, Conn. Dept. of Engineering and Applied Science.

Descriptors: *Nitrogen, *Supersonic flow, Temperature, Relaxation, Jets, Molecular beams.
Identifiers: *Molecular relaxation, Squid project.

The rotational relaxation rate in molecular nitrogen has been determined experimentally between 300 and 1000K by time-of-flight analysis of molecular beams from supersonic free jets. The results are in reasonable agreement with those of other investigators over their common temperature range. (Author)

AD-783 594/5GA Reprint
Pittsburgh Univ Pa Space Research Coordination Center
ELECTRON-IMPACT EXCITATION OF THE TRIPLET S(0) AND QUINTET S(0) STATES OF ATOMIC OXYGEN,
Edward J. Stone, and Edward C. Zipf. 10 May 73, 10p Rept no. SRCC-199
Contract DA-31-124-ARO(D)-440, Grant NGL-39-011-030
Availability: Pub. in the Jnl. of Chemical Physics, v60 n11 p4237-4243, 1 Jun 74.

Descriptors: *Electron irradiation, *Excitation, Atomic energy levels, Cross sections, Experimental design, Oxygen, Atoms.
Identifiers: *Oxygen atoms.

Absolute cross sections for the excitation of the OI 3s (triplet S(0)) and 3s (quintet S(0)) states by electron impact on atomic oxygen have been measured for electron energies from threshold to 300 eV. Both cross sections are larger than the values predicted by recent theoretical calculations. The experimental techniques used in the production of atomic oxygen and in the measurement of the OI density have been improved and are described in detail. Critical experimental problems concerning the loss of atoms at the system walls and the role of excited states of O2 in the discharged gas are also discussed. (Modified author abstract)

AD-783 614/1GA PC$3.25/MF$2.25
Frank J Seiler Research Lab United States Air Force Academy Colo
EXPERIMENTAL MEASUREMENT OF INTERNAL CHARACTERISTICS OF SPECTRAL LINES USING THE ROSCHDESTVENSKII HOOK METHOD.
Final scientific rept. Dec 71-Apr 74,
Carl A. Forbrich, Jr. Jun 74, 42p Rept no. SRI-TR-74-0013
Sponsored in part by Air Force Weapons Lab., Kirtland AFB, N. Mex.

Descriptors: *Spectrum analysis, *Spectral lines, *Hydrogen, Excitation, Absorption(Physical), Interferometry, Atmosphere entry, Flow fields, Gas dynamics, Stark effect.
Identifiers: *Roschdestvenskii hook method, *Line broadening, Transition probabilities, Doppler broadening, Absorptivity.

The theoretical development of the information that can be obtained from an analysis of the inner hooks of the Roschdestvenskii hook method is presented. The results of the experiments performed using the H-alpha line of excited hydrogen gas to substantiate the inner hook theory for determining the structure of spectral lines are additionally presented. These results are discussed and are determined to be inconclusive due to the low dispersion of the assembled hook method apparatus. The technique has potential application to gas dynamic and especially to two difficult problems encountered in reentry phenomena: (1) Measurement of the radiation absorption characteristics of molecular species and (2) Mapping of species concentrations in nonequilibrium flow fields.

AD-783 625/7GA PC$3.00/MF$2.25
Mount Auburn Research Associates Inc Newton Upper Falls Mass
COMPUTATION OF ION COLLECTION BY A ROCKET-MOUNTED MASS SPECTROMETER IN THE LIMIT OF VANISHING DEBYE NUMBER.
Final rept. 1 Oct 72-31 Oct 73,
Lee W. Parker. 30 Nov 73, 25p Rept no. MARA-57-FP AFCRL-TR-73-0735
Contract F19628-73-C-0065

Descriptors: *Mass spectrometers, *Ion density, *Atmospheric sounding, *Ionosphere, Calibration, Rocketborne, Ionic current, Plasmas(Physics), Mach number.
Identifiers: Current density, Debye length, Electric potential.

Self-consistent calculations are made of the ion current density at the central point (orifice) of an electrically charged mass-spectrometer plate mounted on a rocket, in the limit of zero Debye number (Debye length divided by plate radius). In this limit, the plasma sheath containing the bulk of the potential drop is of zero thickness, but there is generally also a 'presheath' of finite extent. The presheath is determined by quasineutrality, and its structure is (a) independent of plate draw-in potential and Debye number, and (b) dependent on the ion Mach number. The presheath electric field enhances the current collected, by an enhancement factor which depends inversely on Mach number, but which is independent of plate potential and Debye number. A method is suggested for extending the zero-Debye-number solutions in the regime of small but finite Debye numbers. (Modified author abstract)

AD-783 709/9GA PC$3.25/MF$2.25
Brown Univ Providence R I Dept of Chemistry
RESONANCE RAMAN STUDY OF THE REVERSIBLE THERMOCHROMIC PHASE TRANSITION OF A POLYDIACETYLENE.
Technical rept.,
Gregory J. Exarhos, Raymond H. Baughman, and William M. Risen, Jr. Jul 74, 33p Rept no. TR-74-02
Contract N00014-67-A-0191-0024

Descriptors: *Raman spectra, *Phase transformations, Visible spectra, Electron density, Polymers, Molecular vibration, Colors, Temperature, Chemical bonds, Spectrum analysis, Alkynes, Molecular orbitals.
Identifiers: Electron delocalization, *Resonance Raman spectra, *Alkyne polymers, *Thermochromism.

Polymers of the type (=C(R)-CC-(R)C=)n, formed by the solidstate polymerization of the corresponding diacetylene, have extensively delocalized electron density along the chain, as required of a one-dimensional metal. The polymer poly-ETCD, of this form with R=alkylurethane, undergoes a reversible (green-red) thermochromic phase transition in the 117-137C range. Its Raman spectra reveal dramatic changes in the frequency and intensity of double and triple bond bands as a function of source-frequency and of temperature, as it is raised through the transition. The changes result from the transition and from selective resonance enhancement of vibrations for domains with whose electronic transitions the source is in resonance. The pi-electron delocalization is thus shown by Resonance Raman spectroscopy to occur over segments, or domains, along the polymer backbone.

AD-783 716/4GA PC$3.25/MF$2.25
Utah Univ Salt Lake City Dept of Chemistry
BRILLOUIN, RAYLEIGH AND DEPOLARIZED RAYLEIGH SCATTERING STUDIES OF POLYPROPYLENE GLYCOL I.
Technical rept. no. 7, 1 Apr-7 Aug 74,
Y. Y. Huang, and C. H. Wang. 7 Aug 74, 36p
Contract N00014-67-A-0325-0007, Grant PHS-FR-07092

Descriptors: *Light scattering, *Rayleigh scattering, Temperature, Glycols, Polymers, Brillouin zones, Depolarization, Molecular weight, Modulus of elasticity, Polarization, Liquids, Hypersonic velocity, Acoustic waves.
Identifiers: *Polyoxypropylene, Molecular relaxation, *Brillouin scattering, Krishnan effect.

A comprehensive light scattering study of an important polymer, polypropylene glycol, having an average molecular weight of about 425 (PPG 425) was carried out. From the polarized spectra, the velocity and attenuation coefficient of the longitudinal hypersound as a function of temperature were determined. Measurements of the velocity and attenuation coefficient indicate the presence of molecular relaxations between 250 to 390K. A maximum in the sound attenuation versus tem-

perature curve was observed. The Landau-Placzek ratio over a wide range of temperature was also measured and compared with the theory of Litovitz and coworkers on the relaxing molecular liquid over a wide temperature range. Depolarized scattering studies were also carried out. The molecular reorientation time and activation energy are determined from the spectral linewidth measurement as a function of temperature. Depolarization ratios were determined. The Krishnan effect was observed at temperatures below 250K. (Modified author abstract)

AD-783 744/6GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
ELECTROLYSIS,
N. I. Podobaev. 23 Apr 74, 19p Rept no. FSTC-HT-23-2011-72
Trans. of Khimiya v Shkole (USSR) n3 p7-18 1971.

Descriptors: *Electrolysis, Diffusion, Electrolytes, Electrochemistry, Polarization, Surface reactions, Electrodes, Translations, USSR.

Discussed are basic principles of electrolysis including electrode reactions, electrode potential of equilibrium. An explanation is made of oxidation reduction in terms of electrode potential, electrochemical polarization of electrodes due to change in chemical nature of the surface, over voltage of electrode reactions, and diffusion. Also covered were causes of voltage fall in electrolytes, structure of electrolyzer, peculiarities of electrolysis of water solutions of electrolytes, and peculiarities of electrolysis of molten substances.

AD-783 833/7GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
USE OF THE MODEL OF A CONTRACTING SPHERE IN THERMAL DISSOCIATION OF SOLIDS,
Ya. Pysyak. 23 Apr 74, 18p Rept no. FSTC-HT-23-2051-72
Trans. of mono. Geterogenny e Khimicheskie Reaktsii, Minsk, 1970 p71-83.

Descriptors: *Pyrolysis, *Solids, Differential equations, Reaction kinetics, Mathematical models, Solid phases, Translations, USSR.

The solutions of a differential equation describe the process of thermal decomposition of solids in the kinetic, diffusion, and certain transition regions. The characteristic equations which were derived on the basis of the kinetic equations furnish information which is necessary for carrying out thermal decomposition under industrial conditions. In the present article a kinetic differential equation is derived for reactions of the type A(s) = B(s) + C(g), and its application is demonstrated.

AD-783 853/5GA PC$3.00/MF$2.25
Aerospace Corp El Segundo Calif Lab Operations
ELECTROPHORETIC MOBILITIES OF CADMIUM HYDROXIDE, NICKEL HYDROXIDE, AND SILVER OXIDE IN NICD AND AG-ZN BATTERY ELECTROLYTES.
Interim rept.,
Stanley W. Mayer. 5 Jul 74, 17p Rept no. TR-0075(5270-10)-1 SAMSO-TR-74-163
Contract F04701-74-C-0075

Descriptors: *Electrophoresis, *Mobility, *Electrolytes, *Battery separators, Failure, Dispersions, Nickel cadmium batteries, Silver zinc batteries, Silver oxides, Cadmium compounds, Nickel compounds, Hydroxides, Migration, Concentration(Composition), Particles.
Identifiers: *Cadmium hydroxides, Nickel hydroxides, Potassium carbonates, Potassium hydroxides.

Cadmium migration damage of separators is a major cause of Ni-Cd battery failures or performance degradation. A series of electrophoretic mobility measurements has been made for cadmium hydroxide suspensions in concentrated KOH battery electrolyte at several concentrations of K2CO3 to investigate whether electrophoresis of cadmium hydroxide could be the mechanism for migration to separators. It was found that the mobility of the cadmium hydroxide suspension in an applied electrical field is adequate to account for the observed migration of cadmium hydroxide to separators. The view that high carbonate concentrations in Ni-Cd battery electrolyte may increase cadmium migration damage of separators is consistent with these electrophoretic measurements. Zeta potentials have been calculated from the data. Similar measurements have been made for nickel hydroxide suspensions in Ni-Cd battery electrolyte at several K2CO3 concentrations. The results are consistent with ion probe analyses for nickel in nylon separators exhibiting considerable cadmium migration. Silver oxide mobilty was also measured. (Modified author abstract)

AD-783 914/5GA PC$3.00/MF$2.25
Aerospace Corp El Segundo Calif Lab Operations
ROTATIONAL EXCITATION OF N2(+) B DOUBLET SIGMA(+)(U) PRODUCED IN COLLISIONS OF ATOMIC HYDROGEN WITH N2.
Interim rept.,
John H. Birely. 15 Jul 74, 8p Rept no. TR-0075(9270-01)-1 SAMSO-TR-74-161
Contract F04701-74-C-0075

Descriptors: *Nitrogen, *Gas ionization, Excitation, Temperature, Molecular rotation, Particle collisions, Molecular energy levels, Atomic beams.
Identifiers: Rotational energy levels, Atom molecule interactions, Hydrogen atoms.

The rotational excitation of N2(+) B doublet sigma(+)(u) formed in collisions of 20 keV H with N2 is shown to be adequately characterized by a Boltzmann distribution having a rotational temperature equal to the kinetic temperature of the nitrogen target. (Author)

AD-783 915/2GA PC$5.00/MF$2.25
Columbia Radiation Lab New York
RESEARCH INVESTIGATION DIRECTED TOWARD EXTENDING THE USEFUL RANGE OF THE ELECTROMAGNETIC SPECTRUM.
Progress rept. no. 24, 1 Jul 73-30 Jun 74,
Sven R. Hartmann, and William Happer. 30 Jun 74, 160p Rept no. CU-6-74-0383
Contract DAAB07-69-C-0383, Grant AF-AFOSR-2180-72
Continuation of Contract DA-28-043-AMC-00099(E). See also AD-766 274. Sponsored in part by Grants AF-AFOSR-2685-74, NGR-33-008-191, and NSF-GH-38503.

Descriptors: *Alkali metals, *Atomic spectra, *Helium, *Superfluidity, Molecular spectroscopy, Optical pumping, Excitation, Electron transitions, Atomic energy levels, Hyperfine structure, Neodymium, Ruby, Cryogenics, Spectrum analysis, Liquid helium, Solid state physics, Scientific research, Reports, Electronic states, Nitrogen heterocyclic compounds.
Identifiers: Tunable lasers, Superradiance, *Photon echoes, Raman echoes, Two photon absorption.

The report discusses completed and proposed research in atomic and molecular physics conducted at the Columbia Radiation Laboratory from July 1972 to June 1973. Central topics described include the atomic spectra and electronic structure of alkali metals and helium, molecular microwave spectroscopy, the resonance physics of photon echoes in some solid state systems (including Raman echoes, superradiance, and two photon absorption), and liquid helium superfluidity.

AD-783 916/0GA PC$3.25/MF$2.25
Arizona Univ Tucson Dept of Chemistry
CONSIDERATIONS IN SPECTROELECTROCHEMICAL EVALUATION OF HOMOGENEOUS ELECTRON TRANSFER INVOLVING BIOLOGICAL MOLECULES.
Interim technical rept.,
Michael D. Ryan, and George S. Wilson. Aug 74, 30p Rept no. TR-3
Contract N00014-67-A-0209-0014

Descriptors: *Charge transfer, *Blood proteins, *Colorimetric analysis, Concentration(Composition), Diffusion, Catalysis, Absorption(Physical), Reaction kinetics, Time dependence, Spectrum analysis, Absorption spectra, Cations, Chemical radicals, Electrochemistry, Coenzymes.
Identifiers: Chemical reaction mechanisms, *Cytochromes, *Bipyridinium dichloride/dimethyl, *Absorptivity.

The technique of potential-step chronoabsorptometry has been evaluated as applied to the measurement of homogeneous electron transfer reactions. In particular, the reaction of horse heart cytochrome c with methyl viologen radical cation was examined as an example of biological electron transfer using a non-physiological reductant. Theoretical and experimental considerations affecting the measurement of rate constants are discussed. These include the deconvolution of time-dependent spectra and the influence of concentration and diffusion coefficient ratios.

AD-783 919/4GA PC$3.25/MF$2.25
Chicago Univ Ill Materials Research Lab
MATERIALS RESEARCH PROGRAM IN HIGH ENERGY GAS PHASE SYSTEMS.
Final scientific rept. 1 Jun 73-31 May 74,
H. Fritzsche. Aug 74, 39p
Grant DAHC15-73-G-18
Sponsored in part by Air Force Office of Scientific Research, Arlington, Va., Army Research Office, Durham, N.C., Atomic Energy Commission, Washington, D.C., National Institutes of Health, Bethesda, Md., National Science Foundation, Washington, D.C., and Office of Naval Research, Arlington, Va.

Descriptors: *Scientific research, *Excitation, *Electronic states, *Energy transfer, *Particle collisions, Dissociation, Photoionization, Molecular vibration, Photochemical reactions, Abstracts, Atomic energy levels, Molecular energy levels, Spectrum analysis, Free radicals, Microwave spectroscopy, Molecular beams, Hydroxyl radicals, Molecular spectroscopy, Fluorescence, Molecular orbitals, Scattering.
Identifiers: Molecular relaxation, Beam foil spectroscopy, Lamb shift, Double resonance, Nitrogen dioxide, Boron oxide(BO2), Formyl radical.

The report summarizes in the form of abstracts results of 11 faculty members of the Materials Research Laboratory of The University of Chicago. The theoretical and experimental research effort concentrated on the understanding of electronically excited atoms and molecules and on the detailed dynamics of collision processes between atoms and/or molecules. New results are presented on photochemical reactions, intramolecular and intermolecular energy transfer, intermolecular potentials, and the energy distribution in exothermic chemical reactions. New experimental methods employed include beam-foil spectroscopy, microwave-optical double resonance, crossed molecular beams with angular and velocity distribution analysis of reaction products and analysis of their rotational and vibrational states. A list of 86 scientific papers on this research is included. (Author)

AD-783 921/0GA PC$3.00/MF$2.25
Columbia Radiation Lab New York
ATOMIC AND MOLECULAR PHYSICS WITH EMPHASIS ON ATOMIC AND MOLECULAR BEAMS.
Final technical rept. 1 May 66-30 Apr 70,
Polykarp Kusch, and Robert Novick. Aug 74, 12p Rept no. CAL-1271

Contract N00014-67-A-0108-0002

Descriptors: *Cesium, *Hydrogen, *Helium, Scientific research, Abstracts, Visible spectra, Emission spectra, Metastable state, Diatomic molecules, Excitation, Ions, Particle collisions, Electronic states, Hyperfine structure, Polarization, Molecular rotation, Molecular vibration, Molecular energy levels, Atomic energy levels, Electron transitions.
Identifiers: Hydrogen atoms, Atom ion interactions.

The report summarizes the principal achievements of a research program in atomic and molecular physics. Spectroscopic studies of the cesium molecule and lifetime measurements of an electronic state of molecular hydrogen are summarized. In atomic physics, studies were made of the hyperfine structure of metastable hydrogen atoms, the two-photon decay of metastable hydrogenic atoms, and optical excitation of helium atoms with low-energy ions. A rotating square-wave polarizer was also developed. (Modified author abstract)

AECL-4751 PC$8.50/MF$2.25
Atomic Energy of Canada Ltd., Chalk River, Ontario. Chalk River Nuclear Labs.
CHEMISTRY AND MATERIALS DIVISION. PROGRESS REPORT, OCTOBER 1--DECEMBER 31, 1973.
Jan 74, 107p PR-CMa-27
U.S. Sales Only.

Descriptors: (*Aluminium, *Impurities), (*Copper, Impurities), (*Rutherford scattering, *Accuracy), (*Semiconductor materials, *Ion implantation), Aluminium alloys, Atoms, Backscattering, Channeling, Cross sections, Crystal lattices, Crystals, Dislocations, Distribution, Electron microscopy, Germanium, Intermetallic compounds, Niobium, Nitrogen ions, Nuclear reaction analysis, Operation, Physical radiation effects, Research programs, Van de graaff accelerators, Zirconium alloys, Burnup, Chemical analysis, Corrosion, Deuterium, Electrochemistry, Fabrication, Hydrogen, Isotopes, Mass spectroscopy, Measuring methods, Nuclear fuels, Oxygen, Plutonium, Radiation chemistry, Radioactivity, Uranium, Water, Calibration, Cracks, Creep, Electron microscopes, Fluorescence, Molten salts, Tantalum oxides, Thermoluminescence, Thorium oxides, Vacancies, Zirconium-alpha, Annealing, Annihilation, Aqueous solutions, Electrolysis, Nickel, Platinum, Positrons, Potentiometry, Quenching, Separation processes, Urea, Zirconium.

For abstract, see NSA 30 04, number 10214.

AERE-M-2629 PC$4.00/MF$2.25
UKAEA Research Group, Harwell. Atomic Energy Research Establishment.
DETERMINATION OF NITRIC ACID IN TRIBUTYL PHOSPHATE/KEROSENE PHASES CONTAINING URANIUM AND THORIUM.
A. G. Wain. Apr 74, 7p
U.S. Sales Only.

Descriptors: (*Nitric acid, *Titration), Kerosene, Quantitative chemical analysis, Solutions, Tbp, Thorium, Uranium.

For abstract, see NSA 30 04, number 09105.

AERE-R-6566 PC$4.50/MF$2.25
UKAEA Research Group, Harwell. Atomic Energy Research Establishment.
SOLVATION IN LIQUID ALKALI METALS.
R. Thompson. Nov 70, 30p
U.S. Sales Only.

Descriptors: (*Alkali metals, *Solvent properties), (*Oxygen, *Solubility), (*Nitrogen, Solubility), (*Carbon, Solubility), Crystals, Halides, Hydrogen, Liquids, Mathematical models, Solvation.

For abstract, see NSA 30 04, number 09124.

CEA-R-4492 PC$11.00/MF$2.25
CEA Centre d'Etudes Nucleaires de Grenoble, 38 (France).
STUDY OF MOLECULAR DYNAMICS IN NEMATIC AND ISOTROPIC PHASES OF LIQUID CRYSTALS.
A. Farinha-Martins. May 74, 159p
In French. U.S. Sales Only.

Descriptors: (*Crystals, *Nuclear magnetic resonance), Activation energy, Fluid mechanics, Hydrodynamics, Interactions, Isotropy, Kinetics, Liquids, Molecules, Orientation, Protons, Spin-lattice relaxation, Viscosity.

For abstract, see NSA 30 04, number 12151.

CEA-R-4520 PC$4.00/MF$2.25
CEA Centre d'Etudes de Bruyeres-le-Chatel, 92 - Montrouge (France).
INTRODUCTION OF LIQUID-VAPOR PHASE CHANGES INTO THE CHEMICAL EQUILIBRIA OF SILICA, ALUMINA, AND WATER AT HIGH TEMPERATURES.
C. Humbert-Droz, R. Dehais, and A. Frey. May 74, 16p
In French. U.S. Sales Only.

Descriptors: (*Water, *Phase transformations), (*Silicon oxides, Phase transformations), (*Aluminium oxides, Phase transformations), Equilibrium, Gases, High pressure, Liquids, Medium pressure, Mixtures, Nuclear explosions, Phase diagrams, Underground explosions, Very high temperature.

For abstract, see NSA 30 04, number 09125.

CEA-R-4523 PC$4.00/MF$2.25
CEA Centre d'Etudes de Bruyeres-le-Chatel, 92 - Montrouge (France).
CONCENTRATION OF GAS TRACES IN AIR BY DISTILLATION.
C. Humbert-Droz, F. Balard, and J. Leclerc. May 74, 20p
In French. U.S. Sales Only.

Descriptors: (*Rare gases, *Distillation), (*Hydrocarbons, Distillation), (*Hydrogen, Distillation), Air, Extraction columns, Trace amounts.

For abstract, see NSA 30 04, number 09106.

CNAEM-R-111 PC$5.50/MF$2.25
Cekmece Nuclear Research Center, Istanbul (Turkey).
SOME ASPECTS IN THE DETERMINATION OF TOTAL BODY SODIUM.
E. Birol. 1973, 47p
U.S. Sales Only.

Descriptors: (*Sodium, Activation analysis), (*Activation analysis, *Whole-body counting), Body composition, Gamma spectroscopy, In vivo, Phantoms, Quantitative chemical analysis.

For abstract, see NSA 30 04, number 09029.

COM-74-11384/6GA PC$5.75/MF$2.25
National Bureau of Standards, Washington, D.C. Chemical Kinetics Information Center.
CHEMICAL KINETICS DATA SURVEY. VIII. RATE CONSTANTS OF CLOX OF ATMOSPHERIC INTEREST.
Interim rept.,
R. T. Watson. Jun 74, 52p NBSIR-74-516
Prepared by California Univ., Berkeley. Dept. of Chemistry. See also COM-74-10724.

Descriptors: *Chlorine oxides, *Aeronomy, Tables(Data), Atomic spectroscopy, Spectroscopic analysis, Photochemical reactions, Reaction kinetics, Absorption cross sections, Atomic energy levels, Experimental design, Molecular spectroscopy.
Identifiers: *Chlorine atoms, *Atmospheric chemistry, *Reaction rates.

The quantitative data on reactions of chlorine atoms and the chlorine oxides are compiled. Preferred values for rate constants are given where possible. Optical absorption cross sections are given for the species that may photolyze in the atmosphere. The experimental techniques used to obtain the rate data are discussed.

COM-74-50670/0GA Not available NTIS
National Bureau of Standards, Washington, D.C.
VELOCITY OF SOUND IN DENSE FLUID METHANE.
Final rept. Sep 73-Feb 74,
G. C. Straty. Jul 74, 4p
Sponsored in part by American Gas Association, Arlington, Va.
Pub. in Cryogenics, v14 n7 p367-370 Jul 74.

Descriptors: *Methane, *Acoustic velocity, Liquefied natural gas, Compressibility, Specific heat, Cryogenics.
Identifiers: *Liquid methane.

Measurements of the velocity of sound in saturated and compressed fluid methane are reported. Measurements were made on the saturated liquid from 91K to 186K and on the compressed fluid along selected isotherms from 100K to 300K at pressures to about 35 MPa. Data were combined with newly available P rho T data to obtain the isentropic compressibility and the ratio of the specific heats. Measurements along the higher temperature isotherms were limited to densities greater than about 10 mol/l at 300K increasing to about 14 mol/l at 210K due to the large low pressure sound attenuation in methane.

COM-74-50672/6GA Not available NTIS
National Bureau of Standards, Washington, D.C.
SURVEY OF ANALYTICAL SPECTRAL DATA SOURCES AND RELATED DATA COMPILATION ACTIVITIES.
Final rept.,
Lewis H. Gevantman. Jun 72, 19p
Pub. in Analytical Chemistry, v44 n7 p30A-48A Jun 72.

Descriptors: *Molecular spectra, *Atomic spectra, *Information systems, Data processing, Data retrieval, Absorption spectra, X ray diffraction, Nuclear magnetic resonance, Ultraviolet spectra, Mass spectra.

A broad survey is made of analytical spectra data sources. The activities described include some description of the operative data systems, their location and the type of data issued. The report describes sources for infrared spectra mass spectrometric data, atomic absorption data, x-ray diffraction data, NMR spectral data (chemical shift), ultraviolet spectra and others. New initiatives for automation and easy access and retrieval in some spectral areas are mentioned.

COM-74-50675/9GA Not available NTIS
National Bureau of Standards, Washington, D.C.
MULTICONFIGURATION SELF-CONSISTENT-FIELD CALCULATION OF THE DIPOLE MOMENT FUNCTION OF CO(SINGLET SIGMA(+)).
Final rept.,
F. P. Billingsley, II, and M. Krauss. 1974, 15p
Pub. in Jnl. of Chemical Physics, v60 n11 p4130-4144, 1 Jun 74.

Descriptors: *Carbon monoxide, *Dipole moments, Molecular energy levels, Wave functions.
Identifiers: Multiconfiguration self consistent field method.

The dipole moment function for the singlet sigma(+) ground state of CO in the vicinity of

equilibrium internuclear distance has been calculated by the optimized valence configurations (OVC) multiconfiguration self-consistent-field method. The results are compared with existing Hartree-Fock and configuration interaction treatments of the molecule at single points and also the dipole moment function deduced from experimental infrared intensities. The vibrationally averaged expectation value of the dipole moment is based on the computed moment function and accurate vibrational wavefunctions. It is in better agreement with the observed microwave quantity and illustrates that the effect of vibrational averaging is not negligible in systems such as CO that possess small permanent dipole moments. A general prescription for constructing OVC wavefunctions for diatomic molecules is also presented.

COM-74-50676/7GA Not available NTIS
National Bureau of Standards, Washington, D.C.
BULK MODULUS AND DENSITY OF POLYETHYLENE TO 30 KBAR.
Final rept.,
P. L. M. Heydemann, and J. C. Houck. 1972, 7p
Pub. in Jnl. of Polymer Science, Part A-2, v10 p1631-1637 1972.

Descriptors: *Polyethylene, Pressure, Phase transformations, Glass, Density(Mass/volume), Bulk modulus, Equations of state.

The results of bulk modulus and density measurements on low density polyethylene to 30 kbar are presented. From these data the pressure coefficient dTg/dp of the glass transition temperature is obtained and a comparison is made with data calculated from Pastine's theoretical equation of state for polyethylene.

COM-74-50677/5GA Not available NTIS
National Bureau of Standards, Washington, D.C.
ENERGY TRANSFER DURING 'ORBITING' COLLISIONS.
Final rept.,
T. A. Dillon, and J. C. Stephenson. 1 Jun 72, 3p
Pub. in Jnl. of Chemical Physics, v60 n11 p4286-4288, 1 Jun 74.

Descriptors: *Hydrogen fluoride, *Carbon dioxide, *Energy transfer, Molecular vibration, Excitation, Particle collisions.
Identifiers: *Deuterium fluoride, Molecule interactions.

Semiclassical collision theory is used to calculate the temperature dependence of cross sections for exchange of vibrational excitation from HF and DF to CO2. For collisions with kinetic energy less than four fifths of the intermolecular potential well depth there exists a narrow range of impact parameter for which the scattering angle exceeds 2 pi (i.e. more than one revolution). That part of the trajectory in excess of a single revolution can be accurately represented by a simple model of a circular orbit with a constant angular velocity replacing the instantaneous classical turning point. Calculations are compared to experimental data and illustrate the significance of multiple revolution collisions.

COM-74-50678/3GA Not available NTIS
National Bureau of Standards, Washington, D.C.
THERMODYNAMIC PROPERTIES FROM DIFFERENTIAL SCANNING CALORIMETRY BY CALORIMETRIC METHODS.
Final rept.,
Joseph H. Flynn. 1974, 13p
Pub. in Thermochimica Acta, v8 p69-81 1974.

Descriptors: *Phase transformations, *Specific heat, *Calorimeters, Heat measurement, Glass.
Identifiers: *Differential scanning calorimetry.

Simple theory and techniques are explored and developed to use the differential scanning calorimeter as a truly calorimetric instrument for the determination of heat capacities, glass transition and enthalpies of transition between two thermodynamic states of substances. Effects due to the transition kinetics and thermal and electronic lags of the instrument are either corrected for or eliminated.

COM-74-50680/9GA Not available NTIS
National Bureau of Standards, Washington, D.C.
ACCURATE FREQUENCIES OF MOLECULAR TRANSITIONS USED IN LASER STABILIZATION: THE 3.39-MICROMETER TRANSITION IN CH4 AND THE 9.33- AND 10.18-MICROMETER TRANSITIONS IN CO2.
Final rept.,
K. M. Evenson, J. S. Wells, F. R. Peterson, B. L. Danielson, and G. W. Day. 15 Feb 73, 4p
Pub. in Applied Physics Letters, v22 n4 p192-195, 15 Feb 73.

Descriptors: *Carbon dioxide, *Methane, Gas lasers, Frequencies.
Identifiers: *Transitions.

The frequencies of three lasers stabilized to molecular absorptions were measured with an infrared-frequency synthesis chain extending upwards from the cesium frequency standard. The measured values are 29.442 483 315 (25) THz for the 10.18-micrometer R(30) transition in CO2, 32.134 266 891 (24) THz for the 9.33-micrometer R(10) transition in CO2, and 88.376 181 627 (50) THz for the 3.39-micrometer P(7) transition in CH4. The frequency of methane, when multiplied by the measured wavelength reported in the following letter, yields 299 792 456.2(1.1) m/sec for the speed of light.

COM-74-50684/1GA Not available NTIS
National Bureau of Standards, Washington, D.C.
KINETICS OF THE REACTIONS OF SINGLET MOLECULAR OXYGEN (O2 SINGLET DELTA(G)) WITH ORGANIC COMPOUNDS IN THE GAS PHASE.
Final rept.,
Robert E. Huie, and John T. Herron. 1973, 14p
Pub. in International Jnl. of Chemical Kinetics, v5 p197-211 1973.

Descriptors: *Oxygen, *Organic compounds, Chemical reactions, Gases, Molecular energy levels, Reaction kinetics.
Identifiers: Molecule molecule interactions, Oxygen atoms.

The reactions of singlet molecular oxygen (O2 singlet Delta(g)) with a series of organic compounds have been studied in the gas phase at 298K. The concentration of singlet molecular oxygen was determined by titration with 2,5-dimethylfuran. The titration technique was checked using a photoionization technique. Absolute rate constants were measured on the basis of the loss of organic reactant, and in some cases, of singlet molecular oxygen. It was found that small amounts of atomic oxygen arising from the discharge source of singlet molecular oxygen used in this work can lead to serious errors in the determination of rate constants. This problem was eliminated by carrying out the rate measurements in the presence of a small amount of nitrogen dioxide, an oxygen atom scavenger.

COM-74-50687/4GA Not available NTIS
National Bureau of Standards, Washington, D.C.
GRATING SPECTROMETERS AND THEIR APPLICATION IN EMISSION SPECTROSCOPY.
Final rept.,
J. R. Cuthill. 1974, 40p
Pub. in X-Ray Spectroscopy, ch3 p133-172 1974.

Descriptors: *X ray spectrometers, *X ray spectra, Gratings(Spectra), Spectrum analysis, Emission spectra.
Identifiers: Electronic states.

The report if a textbook-type chapter on the basic principles and characteristics of grazing incidence grating spectrometers and their components for use in obtaining soft x-ray emission spectra. Correction factors involved in relating the observed soft x-ray emission spectra to the valence band electron density of states is discussed briefly.

COM-74-50690/8GA Not available NTIS
National Bureau of Standards, Washington, D.C.
THE COULOMB-PROJECTED BORN APPROXIMATION: IV. IONIZATION OF HYDROGEN.
Final rept.,
S. Geltman, and M. B. Hidalgo. 1974, 9p
Pub. in Jnl. of Physics B: Atomic and Molecular Physics, v7 n7 p831-839 1974.

Descriptors: *Gas ionization, *Electron irradiation, *Differential cross sections.
Identifiers: *Hydrogen atoms, Born approximation.

The triple differential cross section for the electron impact ionization of hydrogen atoms is calculated in the Coulomb-projected Born approximation, including exchange, and detailed comparison is made with the ordinary Born result. The calculations are done for a variety of energies and angles of the two secondary electrons in coplanar and non-coplanar geometries. Appreciable differences occur in the results predicted by the various approximations.

COM-74-50735/1GA Not available NTIS
National Bureau of Standards, Washington, D.C.
PREPAKATION OF CONTIGUOUS CHEMISORBED ADLAYERS BY SEQUENTIAL DEPOSITION AND SURFACE MIGRATION.
Final rept.,
Ralph Klein. 1972, 8p
Pub. in Surface Science, v29 p309-316 1972.

Descriptors: *Chemisorption, *Materials separation, *Gases, Surfaces, Oxygen, Carbon monoxide, Nitrogen, Tungsten, Ruthenium, Migrations.

The separation of two sequentially deposited gases on a half shadowed field emission tip by surface migration of the physisorbed layer furnishes a convenient method for the production of distinct, contiguous layers. Oxygen and carbon monoxide on tungsten as well as ruthenium, and oxygen and nitrogen on ruthenium have been separated in this manner.

COM-74-50737/7GA Not available NTIS
National Bureau of Standards, Washington, D.C.
THE FREQUENCY EXTRAPOLATION OF CONDUCTANCE DATA FOR AQUEOUS SALT SOLUTIONS.
Final rept.,
Thomas B. Hoover. 1970, 7p
Pub. in Jnl. of Physical Chemistry, v74 n13 p2667-2673 1970.

Descriptors: *Electrical conductivity, *Solutions, *Polarization(Charge separation), Sea water, Potassium chloride, Frequencies, Electrical resistance, Extrapolation.

Polarization phenomena in conductivity measurements were investigated in order to reduce systematic error in the standardization of solutions intended for the calibration of conductivity cells and salinometers. Data for demal potassium chloride solutions and for Standard Sea Water were obtained with two cells having constants of 37 and 86, respectively, both with bright platinum and with palladium black-coated electrodes. Four empirical and three theoretical functions of resistance vs. frequency were fitted to the data. Correctness of the extrapolation was judged by the agreement of the limiting resistance obtained with bright electrodes with that obtained with coated electrodes. Equations based on the model of Grahame for the faradaic process, as well as a simplified model, agreed within 0.01% while a third theoretical equation was intermediate in accuracy.

COM-74-50746/8GA Not available NTIS
National Bureau of Standards, Washington, D.C.
MICROWAVE SPECTRUM OF BF.
Final rept.,
F. J. Lovas, and D. R. Johnson. 1 Jul 71, 4p
Pub. in Jnl. of Chemical Physics, v55 n1 p41-44, 1 Jul 71.

Descriptors: *Microwave spectra, Dipole moments, Ground state, Molecular rotation, Molecular energy levels.
Identifiers: *Boron fluoride(BF).

Direct rotational transitions have been observed in the ground vibrational state of (10B)(19F) and (11B)(19F) produced in the gas phase by a discharge in flowing BF3. New molecular parameters are derived for (11B)F. The electric dipole moment of BF is determined.

COO-1515-56 PC$4.50/MF$2.25
Wisconsin Univ., Madison.
EXCHANGE OF LYOTROPIC SERIES CATIONS BY MICACEOUS VERMICULITE AND ITS WEATHERING PRODUCTS DETERMINED BY ELECTRON MICROSCOPY AND RADIOCHEMICAL ANALYSIS. PROGRESS REPORT, AUGUST 1, 1971–JULY 31, 1974.
M. L. Jackson. 29p
Contract AT(11-1)-1515

Descriptors: (*Uranium 238, *Fission fragments), (*Vermiculite, *Fission tracks), (*Potassium, *Ion exchange), (*Iron, Ion exchange), Cations, Cesium, Cesium compounds, Cesium 137, Electron microscopy, Ion exchange materials, Iron compounds, Kaolin, Layers, Mica, Potassium compounds, Silicon, Silicon hydroxides, Soils, Strontium compounds, Strontium 90, Hydrofluoric acid, Adsorption, Aerosols, Dusts, Oxygen isotopes, Rain, Sorptive properties, Tracer techniques, Troposphere, Aluminium hydroxides, Calcium, Gels, Iron hydroxides, Strontium.

For abstract, see NSA 30 04, number 09107.

COO-3142-4 PC$4.00/MF$2.25
Connecticut Univ., Storrs.
VACUUM UV SPECTRA OF MOLECULAR CRYSTALS. PROGRESS REPORT, JULY 1, 1973–JUNE 30, 1974.
C. W. Peterson. 1974, 8p
Contract AT(11-1)-3142

Descriptors: (*Molecular crystals, *Optical properties), (*Biological materials, Optical properties), Low pressure, Nucleic acids, Nucleotides, Reflection, Spectra, Ultraviolet radiation.

For abstract, see NSA 30 04, number 12152.

COO-3151-30 PC$6.50/MF$2.25
Cornell Univ., Ithaca, N.Y. Materials Science Center.
ABSORPTION SPECTRA OF GLASSES IN THE FAR INFRARED.
C. L. Cabrera. Jan 74, 70p

Descriptors: (*Glass, *Absorption spectra), Calcium compounds, Far infrared radiation, Fourier transformation, Germanium oxides, Nitrogen oxides, Potassium compounds, Silicon oxides.

For abstract, see NSA 30 04, number 12153.

DP-MS-74-23 PC$6.50/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Savannah River Lab.
EXP 252 CF ACTIVATION ANALYSIS AT THE SAVANNAH RIVER LABORATORY.
K. W. MacMurdo, and W. W. Bowman. 1974, CONF-740608-12
Contract AT(07-2)-1

Descriptors: (*Activation analysis, *Neutron sources), Californium 252, Multi-element analysis, Neutron reactions, Pneumatics, Quantitative chemical analysis, Savannah river plant.

For abstract, see NSA 30 05, number 12203.

EUR-5117 PC$7.00/MF$2.25
Commission of the European Communities, Ispra (Italy). Joint Nuclear Research Center.
GRETEL: A COMPUTER PROGRAM FOR GAMMA RAY SPECTROMETRY WITH GE(LI) DETECTORS.
G. Guzzi, and J. Cuypers. Apr 74, 76p
U.S. Sales Only.

Descriptors: (*Gamma spectroscopy, *Data processing), (*Computer codes, *G codes).

For abstract, see NSA 30 04, number 09086.

EURISOTOP-90 PC$6.75/MF$2.25
Commission of the European Communities, Brussels (Belgium). Bureau Eurisotop.
DETERMINATION OF NITROGEN IN REFRACTORY METALS. ITS TECHNOLOGICAL AND ECONOMIC IMPORTANCE.
P. Albert. May 74, 72p
In French. U.S. Sales Only.

Descriptors: (*Nitrogen, *Quantitative chemical analysis), (*Niobium, *Chemical analysis), (*Tantalum, Chemical analysis), (*Molybdenum, Chemical analysis), Activation analysis, Kjeldahl method, Nuclear reaction analysis, Spectroscopy, Titanium, Trace amounts, Tungsten, Vanadium, Zirconium.

For abstract, see NSA 30 04, number 09030.

IEA-317 PC$4.00/MF$2.25
Instituto de Energia Atomica, Sao Paulo (Brazil).
PROGRAM IN "BASIC" LANGUAGE FOR ANALYSIS OF GAMMA SPECTRA, USING ON-LINE MINICOMPUTERS.
F. W. Lima, and L. T. Atalla. Nov 73, 15p
U.S. Sales Only.

Descriptors: (*Gamma spectra, *Data processing), Computer codes, On-line systems.

For abstract, see NSA 30 04, number 09087.

IFA-CRD-55-1973 PC$7.50/MF$2.25
Institutul de Fizica Atomica, Bucharest (Romania).
CHARGED PARTICLE INDUCED X-RAYS AND NUCLEAR REACTIONS AND THEIR USE IN MICROANALYSIS.
I. R. Lukas. 1973, 91p
U.S. Sales Only.

Descriptors: (*Nuclear reaction analysis, *Reviews), (*Radiation scattering analysis, Reviews), (*X-ray fluorescence analysis, Reviews), Charged particles, Inelastic scattering, Microanalysis, Sensitivity, X radiation.

For abstract, see NSA 30 04, number 09031.

IPP-9-16 PC$4.50/MF$2.25
Max-Planck-Institut fuer Plasmaphysik, Garching/Muenchen (F.R. Germany).
SCATTERING OF RARE GAS IONS FROM METAL SURFACES.
W. Eckstein, H. G. Schaeffler, and H. Verbeek. Jan 74, 29p
U.S. Sales Only.

Descriptors: (*Neon ions, *Collisions), (*Krypton ions, Collisions), (*Metals, *Ion collisions), Crystal structure, Crystals, Energy losses, Inelastic scattering, Kev range 01-10, Kev range 10-100, Surfaces.

For abstract, see NSA 30 04, number 10881.

IRI-133-73-17 PC$4.75/MF$2.25
Interuniversitair Reactor Instituut, Delft (Netherlands).
CATALOGUE OF GAMMA-RAY AND ISOTOPE DATA FOR USE IN NEUTRON ACTIVATION ANALYSIS.
M. de Bruin, P. J. M. Korthoven, and M. J. J. A. Faasse-van Peer. 34p
U.S. Sales Only.

Descriptors: (*Activation analysis, *Data compilation), (*Gamma spectra, Data compilation), Fission products, Gamma radiation, Neutron reactions, Tables, Thermal neutrons.

For abstract, see NSA 30 04, number 09032.

JINR-P12-7928 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Reactions.
THERMOCHROMATOGRAPHIC SEPARATION OF I, AT, AND HG: THE GASEOUS PRODUCTS OF NUCLEAR REACTIONS.
B. Aikhler, and V. P. Domanov. 1974, 12p
In Russian. U.S. Sales Only.

Descriptors: (*Iodine, *Separation processes), (*Astatine, Separation processes), (*Mercury, Separation processes), Air, Gas chromatography, Gases, Quartz, Silver.

For abstract, see NSA 30 04, number 09109.

LA-UR-74-845 PC$4.50/MF$2.25
Los Alamos Scientific Lab., N.Mex.
DETERMINATION OF EXP 17 O AND EXP 18 O ISOTOPIC ABUNDANCES IN EXP 238 PU MATERIALS BY GAMMA SPECTROMETRY.
J. Bubernak, and G. M. Matlack. 30p CONF-740626-1

Descriptors: (*Oxygen 17, *Gamma spectroscopy), (*Oxygen 18, Gamma spectroscopy), (*Plutonium oxides, *Chemical analysis), Accuracy, Isotope ratio, Nondestructive analysis, Radioisotope heat sources, Sensitivity.

For abstract, see NSA 30 05, number 12239.

LA-5497 PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
DETERMINATION OF CARBON, HYDROGEN, AND TRITIUM IN IRRADIATED REACTOR FUELS AND CLADDING MATERIALS.
C. S. MacDougall, T. K. Marshall, G. M. Matlack, and G. R. Waterbury. Dec 73, 10p
Contract W-7405-eng-36

Descriptors: (*Carbon, *Gravimetric analysis), (*Hydrogen, Gravimetric analysis), (*Tritium, *Scintillation counting), (*Nuclear fuels, *Chemical analysis), Accuracy, Fuel cans, Impurities, Quantitative chemical analysis, Tritium compounds, Very high temperature.

For abstract, see NSA 30 04, number 09051.

LA-5587-MS PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
METHOD TO ESTIMATE THE SPECIFIC FISSIONS IN EXP 235 U USING A NAI CRYSTAL.
S. Balestrini. Apr 74, 28p
Contract W-7405-eng-36

Descriptors: (*Neutron reactions, *Fission), (*Uranium 235, Neutron reactions), (*Computer codes, *A codes), Criticality, G codes, Gamma spectroscopy, Pulse analyzers, Radiometric analysis, Scintillation counting, Solid scintillation detectors.

For abstract, see NSA 30 04, number 09089.

LBL-2248 PC$10.75/MF$2.25
California Univ., Berkeley Lawrence Berkeley Lab.

PROTON AND ELECTRON SPIN RELAXATION IN AQUEOUS SOLUTIONS OF NICKEL(II) AND COBALT(II) IONS.
T. M. Hynes. May 74, 151p
Contract W-7405-eng-48

Descriptors: (*Protons, *Spin-spin relaxation), (*Electrons, Spin-spin relaxation), Aqueous solutions, Cobalt ions, Equilibrium, Interactions, Magnetic fields, Nickel ions, Nuclear magnetic resonance, Relaxation, Temperature dependence, Viscosity.

For abstract, see NSA 30 04, number 12183.

LBL-2291 PC$8.25/MF$2.25
California Univ., Berkeley Lawrence Berkeley Lab.
MASS TRANSFER TO A PLANE BELOW A ROTATING DISK.
R. V. Homsy. Mar 74, 104p
Contract W-7405-eng-48

Descriptors: (*Mass transfer, *Kinetics), Convection, Copper, Deposits, Electrodeposition, Hydrodynamics, Rotation, Stokes law, Thickness.

For abstract, see NSA 30 04, number 12184.

NEL-563 PC$4.00/MF$2.25
National Engineering Lab., East Kilbride (UK).
BIBLIOGRAPHY OF THE THERMAL CONDUCTIVITY AND VISCOSITY OF CARBON DIOXIDE.
A. Mackay. Apr 74, 20p
U.S. Sales Only.

Descriptors: (*Carbon dioxide, *Bibliographies), Thermal conductivity, Viscosity.

For abstract, see NSA 30 04, number 09126.

NIM-1592 PC$4.25/MF$2.25
National Inst. for Metallurgy, Johannesburg (South Africa).
DETERMINATION OF LINE INTENSITIES IN THE PRESENCE OF INTERFERING SPECTRA IN DISPERSIVE X-RAY-FLUORESCENCE SPECTROMETRY. PROJECT REPORT NO. 2.
C. E. Austen. 25 Jan 74,
U.S. Sales Only.

Descriptors: (*X-ray fluorescence analysis, *Data processing), Computer codes, Niobium, Ores, Tantalum.

For abstract, see NSA 30 05, number 12240.

NP-19999 PC$7.75/MF$2.25
Interuniversitair Reactor Instituut, Delft (Netherlands).
ANNUAL REPORT, 1972–1973.
93p
In Dutch. U.S. Sales Only.

Descriptors: (*Magnetism, *Research programs), (*Moessbauer effect, Research programs), (*Reactors, Research programs), Chemistry, Dosimetry, Molecules, Radiation protection.

For abstract, see NSA 30 04, number 10920.

NP-20004 PC$4.00/MF$2.25
AN SSSR, Moscow. Fizicheskij Inst.
CROSS SECTION OF TWO, THREE, FOUR, AND FIVE-PHOTON IONIZATION OF ALKALI ATOMS.
G. A. Delone, N. B. Delone, V. K. Zolotarev, N. L. Manakov, and G. K. Piskova. 1973, 12p
In Russian. U.S. Sales Only.

Descriptors: (*Sodium, Photoionization), (*Potassium, Photoionization), (*Photoionization, *Cross sections), Atoms, Ionization, Laser radiation.

For abstract, see NSA 30 04, number 10891.

NP-20043 PC$10.75/MF$2.25
Sentralinstitutt for Industriell Forskning, Oslo (Norway).
ANALYSIS AND CHARACTERIZATION OF TRACE ELEMENTS, IN PARTICULAR BROMINE, SELENIUM, AND ARSENIC IN MARINE ORGANISMS.
G. Lunde. 1974, 150p
U.S. Sales Only.

Descriptors: (*Bromine, *Chemical analysis), (*Selenium, Chemical analysis), (*Arsenic, *Absorption), (*Fishes, Chemical analysis), Absorption spectroscopy, Activation analysis, Algae, Aqueous solutions, Autoradiography, Cadmium, Chlorine, Cobalt, Copper, Ecology, Food chains, Growth, Iodine, Iron, Lead, Mammals, Mercury, Metabolism, Metals, Oils, Oysters, Phosphorus, Plankton, Seafood, Seaweeds, Solvent extraction, Sulfur, Trace amounts, X-ray fluorescence analysis, Zinc.

For abstract, see NSA 30 05, number 12205.

ORNL-TM-4601 PC$5.00/MF$2.25
Oak Ridge National Lab., Tenn.
CRYSTAL BALL: A COMPUTER PROGRAM FOR DETERMINING NEUTRON SPECTRA FROM ACTIVATION MEASUREMENTS.
F. B. K. Kam, and F. W. Stallmann. Jun 74, 38p
Contract W-7405-eng-26

Descriptors: (*Computer codes, *C codes), (*Neutron spectra, Computer codes), Delta function, Integral equations, Mathematical operators, Radioactivation, Series expansion.

For abstract, see NSA 30 04, number 09034.

ORNL-tr-2813 PC$8.50/MF$2.25
AN Uzbekskoj SSR, Tashkent. Inst. Ehlektroniki.
INTERACTION OF ATOMIC PARTICLES IN THE BULK AND ON THE SURFACE OF A SOLID.
U. A. Arifov. 1972, 109p
Translated from Russian.

Descriptors: (*Metals, *Sputtering), (*Cesium ions, *Collisions), Anions, Data compilation.

For abstract, see NSA 30 04, number 10882.

ORNL-tr-2814 PC$10.50/MF$2.25
AN Uzbekskoj SSR, Tashkent. Inst. Ehlektroniki.
AUGER EFFECT.
E. S. Parilis. 1969, 146p
Translated from Russian.

Descriptors: (*Auger effect, *Reviews).

For abstract, see NSA 30 04, number 10950.

ORO-3018-125 PC$4.25/MF$2.25
Louisiana State Univ., Baton Rouge Coates Chemical Labs.
ASSIGNMENT OF MOLECULAR RYDBERG TRANSITIONS. II. ENERGY SEPARATIONS OF THE IS RYDBERG LEVELS OF MONOHALIDES.
P. Hochmann, P. H. Templet, and S. P. McGlynn. 1973, 25p

Descriptors: (*Halides, *Energy levels), (*Organic halogen compounds, Energy levels), Correlations, Energy-level transitions, Excitation, Ionization, Molecules, Rare gases, Rydberg correction.

For abstract, see NSA 30 05, number 14718.

ORO-3018-126 PC$4.75/MF$2.25
Louisiana State Univ., Baton Rouge Coates Chemical Labs.
ASSIGNMENT OF MOLECULAR RYDBERG TRANSITIONS. III. LOW-ENERGY RYDBERG TRANSITIONS IN MERCURY HALIDES.
P. H. Templet, P. Hochmann, and S. P. McGlynn. 1972, 34p

Descriptors: (*Mercury bromides, *Energy-level transitions), (*Halides, Energy-level transitions), (*Mercury chlorides, Energy-level transitions), (*Mercury iodides, Energy-level transitions), Absorption spectra, Ionization, Molecules, Rydberg correction, Ultraviolet radiation, Vapor pressure.

For abstract, see NSA 30 05, number 14719.

ORO-3018-127 PC$4.25/MF$2.25
Louisiana State Univ., Baton Rouge Coates Chemical Labs.
ELECTRONIC SPECTROSCOPY OF HIGHLY-POLAR AROMATICS. IX. CYANOANISOLES.
Y. H. Lui, and S. P. McGlynn. 1973, 21p

Descriptors: (*Aromatics, *Emission spectra), (*Ethers, Emission spectra), Absorption, Energy levels, Energy transfer, Ethanol, Fluorescence, Kinetics, Luminescence, Naphthalene, Phosphorescence, Recrystallization.

For abstract, see NSA 30 05, number 14720.

ORO-3018-130 PC$20.75/MF$2.25
Louisiana State Univ., Baton Rouge.
PHYSICO-CHEMICAL STUDY OF SOME AREAS OF FUNDAMENTAL SIGNIFICANCE TO BIOPHYSICS. FINAL REPORT, 1971–1974.
S. P. McGlynn. 22 May 74, 352p
Contract AT(40-1)-3018

Descriptors: (*Biophysics, *Research programs), Absorption spectroscopy, Amides, Excited states, Luminescence, Molecules, Photoelectron spectroscopy.

For abstract, see NSA 30 04, number 09128.

ORO-3027-23 PC$4.75/MF$2.25
Georgia Inst. of Tech., Atlanta School of Electrical Engineering.
EXCITATION AND IONIZATION OF IONS BY ELECTRON IMPACT. TECHNICAL PROGRESS REPORT, SEPTEMBER 1, 1973–MAY 31, 1974.
R. K. Feeney, T. F. Divine, J. W. Hooper, R. M. Kovac, and D. McPherson. 31 May 74, 32p
Contract AT(40-1)-3027

Descriptors: (*Thallium ions, Electron-ion collisions), (*Cesium ions, Electron-ion collisions), (*Rubidium ions, Electron-ion collisions), (*Electron-ion collisions, *Excitation), Argon, Boron ions, Carbon ions, Cations, Cross sections, Elastic scattering, Electric dipole moments, Electron-atom collisions, Energy-level transitions, Ev range, Ion sources, Ionization, Kev range 01-10, Multiplets, Research programs.

For abstract, see NSA 30 04, number 10921.

ORO-4254-17 PC$4.00/MF$2.25
Oklahoma State Univ., Stillwater.
DETERMINATION OF FREE CHLORINE IN NATURAL WATERS.
P. Whitfield. Mar 74, 12p

Descriptors: (*Chlorine, *Absorption spectroscopy), (*Water, *Chemical analysis), Activation analysis, Azines, Neutron reactions, Proton reactions, Quantitative chemical analysis.

For abstract, see NSA 30 04, number 09035.

ORO-4254-19 PC$4.00/MF$2.25
Oklahoma State Univ., Stillwater.
USE OF ORGANIC COMPLEXES IN EXTRACTIONAL PHOTOMETRIC AND FLUORIMET-

RIC DETERMINATION OF URANIUM FROM AQUEOUS SYSTEMS.
1972,

Descriptors: (*Uranium, *Fluorescence spectroscopy), Accuracy, Aqueous solutions, Arsenazo, Carbonates, Edta, Photometry, Quantitative chemical analysis, Rhodamines, Sensitivity, Uranium complexes, Uranyl compounds.

For abstract, see NSA 30 04, number 09052.

ORO-4254-20 PC$5.75/MF$2.25
Oklahoma State Univ., Stillwater.
BISMUTH AMALGAM--PHOSPHATE SELECTIVE ELECTRODE.
J. M. Pierce. Jul 73, 52p

Descriptors: (*Phosphates, *Ion selective electrode analysis), Electrodes, Mercury alloys, Quantitative chemical analysis.

For abstract, see NSA 30 04, number 12102.

PATENT-3 298 160 Not available NTIS
Department of Agriculture, Washington, D.C.
GAS-SOLID CHROMATOGRAPHY USING COLUMN COMPRISING AGNO3-COATED ALUMINA.
Patent,
Richard L. Hoffmann. Filed 27 Jun 66, patented 17 Jan 67, 4p PAT-APPL-561 658,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Patents, *Gas chromatography, *Silver nitrate, *Column packings, *Aliphatic hydrocarbons, Columns(Process engineering), Aluminum oxide.
Identifiers: PAT-CL-55-67.

The invention relates to a novel AgNO3-coated alumina-type absorption column for use in a gas-solid chromatograph. Upon injecting a mixture of saturated and olefinic hydrocarbons onto the column, the unsaturated hydrocarbons, are not only adsorbed on a critically short column segment as are the alkanes but that, unlike the alkanes, the unsaturated hydrocarbons are selectively and quantitatively retained on the coated alumina segment. The resulting chromatogram contains only paraffinic peaks. The conventional alumina contained only in a critically short initial (injection receiving) portion of the column has been replaced by light-protected alumina that is critically coated with about 18-22% by weight of Agno3.

PATENT-3 781 556 Not available NTIS
Atomic Energy Commission, Washington, D.C.
NEUTRON ACTIVATION ANALYSIS SYSTEM.
Patent,
Morris C. Taylor, and John R. Rhodes. Filed 8 Sep 72, patented 25 Dec 73, 9p PAT-APPL-287 310
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Neutron activation analysis, *Cement, *Patents, Calcium, Silicon, Aluminum, Fluid flow.
Identifiers: PAT-CL-250-302.

The invention relates to neutron activation analysis systems for the analysis of various fluid media, such as solutions, slurries, and fluidized powders in process. It has particular applicability for monitoring a slurry of cement raw mix during manufacturing and blending operations.

PB-234 434/9GA PC$3.75/MF$2.25
Tyco Labs., Inc., Waltham, Mass.
A POLAROGRAPHIC PO2-PCO2 PROBE.
Final rept. 15 Jun 73-15 Mar 74,
Paul A. Malachesky, and Juanita I. Bradspies. Apr 74, 63p C-231 NIH/NHLI-N01-HR-33004-F
Contract N01-HR-33004

Descriptors: *Oxygen, *Carbon dioxide, *Polarographic analysis, *Blood gas analysis, Pressure, Membranes, Nonaqueous electrolytes, Electrodes, Probes, Electrochemistry.

A feasibility study has been carried out on the concept of a bi-electrode probe for the simultaneous polarographic measurement of both PO2 and PCO2. The key to this approach is the use of a non-aqueous electrolyte which allows PCO2 to be determined polarographically in addition to PO2. Membrane electrode probes using an amalgamated platinum cathode in a tetraethylammonium perchlorate-dimethylsulfoxide electrolyte have been examined and the feasibility of this concept has been demonstrated. (Modified author abstract)

RFP-2170 PC$4.00/MF$2.25
Dow Chemical U.S.A., Golden, Colo. Rocky Flats Div.
HEAT OF FORMATION OF PLUTONIUM HYDRIDE.
F. L. Oetting, and D. R. Horrell. 27 May 74, 9p
Contract AT(29-1)-1106

Descriptors: (*Plutonium hydrides, *Formation heat).

For abstract, see NSA 30 05, number 12280.

SGAE-2254 PC$4.00/MF$2.25
Oesterreichische Studiengesellschaft fuer Atomenergie G.m.b.H., Seibersdorf. Physik-Inst.
PROMPT NEUTRON ACTIVATION ANALYSIS (NAA) AND ITS USE IN THE DETERMINATION OF BORON AND CADMIUM IN AQUEOUS SOLUTIONS AND IN HUMAN URINE.
R. Yaghubian, and E. Lanzel. Mar 74, 19p CONF-740120-2
In German. U.S. Sales Only.

Descriptors: (*Boron, *Activation analysis), (*Cadmium, Activation analysis), (*Urine, Activation analysis), Aqueous solutions, Neutron reactions, Quantitative chemical analysis, Thermal neutrons.

For abstract, see NSA 30 04, number 09036.

SLA-73-1036 PC$7.75/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
EFFECT OF INCREASING OXYGEN PRESSURE ON THE LUMINOSITY OF THE METAL-OXYGEN PHOTOFLASH REACTION.
L. S. Nelson, C. J. M. Jr. Northrup, R. P. Wemple, N. L. Richardson, and K. Keil. Mar 74, 91p
Contract AT(29-1)-789

Descriptors: (*Zirconium, *Oxidation), (*Hafnium, Oxidation), (*Aluminium, Oxidation), (*Zirconium hydrides, Oxidation), Combustion, Emission, High pressure, High temperature, Medium pressure, Oxygen, Pulses, Ultrahigh temperature, Very high temperature, Visible radiation.

For abstract, see NSA 30 04, number 10272.

SLA-74-107 PC$4.75/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
RELATIVISTIC, ELASTIC ELECTRON SCATTERING FROM ATOMS AT ENERGIES GREATER THAN 1 KEV.
M. E. Riley. May 74, 33p
Contract AT(29-1)-789

Descriptors: (*Electron-atom collisions, *Elastic scattering), Carbon monoxide, Corrections, Cross sections, Kev range, Nitrogen, Polarization.

For abstract, see NSA 30 04, number 10922.

SLA-74-212 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
SIMPLE MODEL OF SUPERRADIANCE.
M. E. Riley. May 74, 16p
Contract AT(29-1)-789

Descriptors: (*Atoms, *Gases), (*Molecules, Gases).

For abstract, see NSA 30 04, number 10951.

SLL-74-5225 PC$4.00/MF$2.25
Sandia Labs., Livermore, Calif.
UPPER AND LOWER BOUNDS ON THE VACUUM PHOTOEMISSION FROM MULTI-DIMENSIONAL SURFACES.
T. A. Dellin. Mar 74, 8p CONF-740707-2
Contract AT(29-1)-789

Descriptors: (*Wires, *Photoemission), (*Surfaces, Photoemission), Boundary conditions, Cylindrical configuration.

For abstract, see NSA 30 04, number 10883.

SLL-74-5226 PC$4.00/MF$2.25
Sandia Labs., Livermore, Calif.; Sandia Labs., Albuquerque, N.Mex.
PHOTO-COMPTON CURRENTS AT MATERIAL INTERFACES: THEORY AND EXPERIMENT.
T. A. Dellin, K. W. Dolan, and C. J. MacCallum. Mar 74, 8p CONF-740707-3
Contract AT(29-1)-789

Descriptors: Algebra, Compton effect, Electrons, Energy spectra, Interfaces, Photoelectric effect, Photon collisions, Photon-electron interactions, Physical radiation effects.

For abstract, see NSA 30 04, number 10884.

SLL-74-5230 PC$4.00/MF$2.25
Sandia Labs., Livermore, Calif.
ELECTRON BACKSCATTERING AND SECONDARY ELECTRON YIELD MEASUREMENTS FROM DIELECTRIC MATERIALS.
S. Gair. Apr 74, 8p CONF-740707-4
Contract AT(29-1)-789

Descriptors: (*Electron collisions, *Backscattering), (*Mylar, Electron collisions), (*Polyethylenes, Electron collisions), (*Graphite, Electron collisions), Monte carlo method, Surfaces.

For abstract, see NSA 30 04, number 10885.

SRO-810-1 PC$4.50/MF$2.25
Clemson Univ., S.C.
MATHEMATICAL MODELING OF DONNAN DIALYSIS, A CONTINUOUS ION EXCHANGE MEMBRANE PROCESS. ANNUAL PROGRESS REPORT.
S. S. Melsheimer. 31 May 74, 28p
Contract AT(38-1)-810

Descriptors: (*Dialysis, *Mathematical models), Computer codes, Data processing, Ion exchange, Mass transfer, Membranes.

For abstract, see NSA 30 05, number 12281.

UCID-16500 PC$4.50/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
X-RAY SCATTERING FROM LOW Z MATERIALS: EXPERIMENTAL RESULTS FOR POLYSTYRENE.
K. G. Tirsell, and E. M. Lent. Apr 74, 30p
Contract W-7405-eng-48

Descriptors: (*Polystyrene, *Photon collisions), Energy spectra, Kev range 01-10, Kev range 10-100, X radiation.

For abstract, see NSA 30 04, number 10886.

UCRL-51558 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
FEASIBILITY OF ISOTOPIC ABUNDANCE MEASUREMENTS USING RAMAN SCATTERING.
R. C. Harney, and S. D. Bloom. 18 Apr 74, 12p
Contract W-7405-eng-48

Descriptors: (*Nitrogen isotopes, *Chemical analysis), (*Isotope ratio, *Measuring methods), Isotope effects, Lasers, Raman effect, Scattering.

For abstract, see NSA 30 04, number 09053.

Y-1944 PC$4.00/MF$2.25
Oak Ridge Y-12 Plant, Tenn.
PREPARATION OF LITHIUM ISOTOPIC STANDARDS.
R. E. Barringer. 23 May 74, 20p
Contract W-7405-eng-26

Descriptors: (*Mass spectrometers, *Calibration standards), (*Lithium isotopes, *Sample preparation), Chemical preparation, Isotope ratio, Lithium sulfates, Lithium 6, Lithium 7.

For abstract, see NSA 30 04, number 09055.

7E. Radio and Radiation Chemistry

AD-783 712/3GA PC$3.00/MF$2.25
Washington State Univ Pullman Dept of Chemistry
PICOSECOND FLASH PHOTOLYSIS: TRANSIENT ABSORPTION IN SN(IV), PD(II), AND CU(II) PORPHYRINS.
Technical rept.,
Douglas Magde, M. W. Windsor, D. Holten, and M. Gouterman. Jun 74, 19p Rept no. TR-5
Contract N00014-68-A-0410-0003
Prepared in cooperation with Washington Univ., Seattle. Dept. of Chemistry.

Descriptors: *Porphyrins, *Tin compounds, *Palladium compounds, *Copper compounds, Metalorganic compounds, Photolysis, Reaction kinetics, Excitation, Quantum efficiency, Visible spectra, Absorption spectra, Molecular energy levels, Electronic states.
Identifiers: *Flash photolysis.

From picosecond flash photolysis and spectroscopy, the absorption spectra of the first excited singlet S(1) and of the first excited triplet T(1) of (OEP)SnCl2 (Octaethylporphinatotin dichloride) are determined. The triplet quantum yield is determined. Similar S(1) and T(1) phototransient absorption spectra occur in (OEP)Pd. However, two Cu porphyrins show only one phototransient absorption spectrum. T(1) absorption results are generally consistent with the available earlier spectroscopic studies made with other techniques. (Modified author abstract)

AREAEE-188 PC$5.50/MF$2.25
Atomic Energy Establishment, Cairo (Egypt).
SOME THERMAL SITUATION ASPECTS IN THE BOMB REDUCTION OF URANIUM TETRAFLUORIDE TO URANIUM METAL.
A. A. Abou-Zahra, and F. H. Hammad. 1973, 50p
U.S. Sales Only.

Descriptors: (*Uranium tetrafluoride, *Bomb reduction), (*Uranium, *Production).

For abstract, see NSA 30 05, number 12384.

BNL-18899 PC$4.00/MF$2.25
Brookhaven National Lab., Upton, N.Y.
APPLIED HOT-ATOM CHEMISTRY, LABELING OF COMPOUNDS, ISOTOPE PRODUCTION.
A. P. Wolf. 8p CONF-740540-2

Descriptors: (*Radiopharmaceuticals, *Hot atom chemistry), (*Isotope production, Hot atom chemistry), Chemical preparation, Labelled compounds, Labelling, Radiochemistry, Radioisotopes.

For abstract, see NSA 30 05, number 12372.

BNL-18900 PC$4.00/MF$2.25
Brookhaven National Lab., Upton, N.Y.
POSITION PAPER ON HOT-ATOM CHEMISTRY IN INORGANIC SOLIDS.
G. Harbottle. 1974, 10p CONF-740540-3

Descriptors: Chemical reaction kinetics, Chromates, Chromium 51, Crystals, Hot atom chemistry, Inorganic compounds, Potassium compounds, Solids.

For abstract, see NSA 30 05, number 12373.

BNL-18901 PC$4.00/MF$2.25
Brookhaven National Lab., Upton, N.Y.
HOT-ATOM CHEMISTRY OF CARBON.
A. P. Wolf. 1974, 12p CONF-740540-4

Descriptors: (*Carbon, *Hot atom chemistry), Binding energy, Chemical bonds, Chemical reaction kinetics, Hydrogen.

For abstract, see NSA 30 05, number 12374.

BNL-18902-R PC$4.00/MF$2.25
Brookhaven National Lab., Upton, N.Y.
IMPACT OF THEORETICAL CHEMISTRY ON ELUCIDATION OF HOT ATOM REACTION MECHANISMS.
1974, 14p CONF-740540-1

Descriptors: Carbon, Chemical reaction kinetics, Excitation, Excited states, Hot atom chemistry, Recoils.

For abstract, see NSA 30 05, number 12375.

CNAEM-R-119 PC$4.00/MF$2.25
Cekmece Nuclear Research Center, Istanbul (Turkey).
COMPLEX CHEMISTRY OF URANYL NITRATE-P-AMINOBENZOIC ACID SYSTEM.
Y. Bal, and M. T. Erben. 1973, 5p
U.S. Sales Only.

Descriptors: (*Uranium complexes, *Structural chemical analysis), Coordination number, Ligands, Paba, Spectrophotometry, Uranyl nitrates.

For abstract, see NSA 30 04, number 09217.

COM-74-50717/9GA Not available NTIS
National Bureau of Standards, Washington, D.C.
INFRA-RED LASER ENHANCED REACTIONS: CHEMISTRY OF VIBRATIONALLY EXCITED O3 WITH NO AND O2(SINGLET DELTA).
Final rept.,
M. J. Kurylo, W. Braun, A. Kaldor, S. M. Freund, and R. P. Wayne. Jul 74, 17p
Sponsored in part by Department of Transportation, Washington, D.C.
Pub. in Jnl. of Photochemistry, v3 p71-87 1974/75.

Descriptors: *Ozone, *Oxygen, *Nitrogen oxide(NO), *Exchange reactions, Reaction kinetics, Excitation, Molecular vibration, Photochemical reactions.
Identifiers: Molecule molecule interactions, Vibrational energy levels, Reaction rates.

Vibrationally excited ozone, produced by absorption of CO2 laser radiation, was found to react significantly faster with NO and O2(singlet Delta) than thermal ozone. Using a modulation technique, absolute and relative rate constants at 300K were calculated assuming rapid equilibration between the three closely spaced vibrationally excited levels of O3, and that only the lowest level of these, the v2 bending mode, is active in reaction. The fraction of vibrational energy usable in chemical reaction was found. Details of the modulation technique, involving chemiluminescence detection of NO2 and resonance fluorescence detection of oxygen atoms, are described.

COO-3221-29 PC$4.00/MF$2.25
Hebrew Univ., Jerusalem (Israel). Dept. of Physical Chemistry.
HYDROPEROXYL RADICAL REACTIONS. II. CUPRIC IONS IN MODULATED PHOTOLYSIS-EPR EXPERIMENTS. PROGRESS REPORT, SEPTEMBER 1, 1972--JULY 1, 1973.
G. Czapski, D. Meisel, and H. Levanon. 1973, 19p
Contract AT(11-1)-3221

Descriptors: (*Thorium complexes, *Chemical reaction kinetics), (*Hydroperoxy radicals, Chemical reaction kinetics), (*Copper complexes, Chemical reaction kinetics), Cations, Copper compounds, Decomposition, Electron spin resonance, Oxygen, Photolysis.

For abstract, see NSA 30 04, number 09218.

COO-3221-30 PC$4.50/MF$2.25
Hebrew Univ., Jerusalem (Israel). Dept. of Physical Chemistry.
HYDROPEROXYL RADICAL REACTIONS. III. PULSE-RADIOLYTIC STUDY OF THE REACTION OF HO SUB 2 WITH SOME METAL IONS. PROGRESS REPORT, SEPTEMBER 1, 1973--JULY 1, 1974.
D. Meisel, Y. A. Ilan, and G. Czapski. 1974, 29p
Contract AT(11-1)-3221

Descriptors: (*Hydrogen peroxide, *Radiolysis), (*Hydroperoxy radicals, *Chemical reactions), (*Uranium, Chemical reactions), (*Thorium, Chemical reactions), Cations, Cerium, Cerium compounds, Electron beams, Electron spin resonance, Pulsed irradiation, Thorium compounds, Uranium compounds.

For abstract, see NSA 30 04, number 09163.

COO-3416-18 PC$4.50/MF$2.25
Pennsylvania State Univ., University Park Dept. of Chemistry.
RADIATION CHEMISTRY AND MASS SPECTROMETRY OF VOLATILE SILANES AND GERMANES. PROGRESS REPORT, JUNE 1, 1973--MAY 31, 1974.
F. W. Lampe. 1974, 30p
Contract AT(11-1)-3416

Descriptors: (*Silanes, *Radiolysis), (*Germanes, Radiolysis), (*Germanium compounds, Radiolysis), Gamma radiation, Mass spectroscopy, Research programs.

For abstract, see NSA 30 04, number 09164.

IRE-5-1973 PC$5.50/MF$2.25
Institut National des Radioelements, Brussels (Belgium).
CRITICAL STUDY OF THE INDUSTRIAL APPLICATION OF GAMMA RADIATION IN THE FIELD OF CROSSLINKING POLYMERS.
P. Dardenne, and W. Schietecatte. Dec 73, 46p
In French. U.S. Sales Only.

Descriptors: (*Polymers, *Chemical radiation effects), Comparative evaluations, Cross-linking, Economics, Electron beams, Gamma radiation, Industry, Ionizing radiations, Uses.

For abstract, see NSA 30 04, number 09165.

ORO-2504-215 PC$4.00/MF$2.25
Maryland Univ., College Park Dept. of Physics and Astronomy.

MUONIUM FORMATION MEASUREMENT IN DILUTE ARGON GAS. TECHNICAL REPORT NO. 74-079.
B. A. Barnett, C. Y. Chang, G. B. Yodh, J. B. Carroll, and M. Eckhause. 1973, 14p

Descriptors: (*Muonium, *Precession), Boundary conditions, Probability, Relaxation.

For abstract, see NSA 30 04, number 10911.

ORO-4059-4 PC$4.00/MF$2.25
Baylor Univ., Waco, Tex.
RADIATION CHEMISTRY OF HIGH POLYMERS. PROGRESS REPORT NO. 4, MAY 1, 1973--MAY 1, 1974.
M. Dole. 15 May 74, 8p
Contract AT(40-1)-4059

Descriptors: (*Polyethylenes, *Radiolysis), Chemical reaction kinetics, Gamma radiation, Morphological changes, Radiation chemistry, Radicals, Research programs.

For abstract, see NSA 30 04, number 09166.

TID-26575 PC$4.00/MF$2.25
Mellon Inst. of Science, Pittsburgh Radiation Research Labs.
INTERFACING THE BIOMATION 8100 TRANSIENT RECORDER TO A PDP-8 MINICOMPUTER FOR KINETIC MEASUREMENTS.
C. G. Hobaugh, L. K. Patterson, and R. W. Fessenden. 28 Dec 73, 20p SR-16
Contract AT(11-1)-3238

Descriptors: (*Radiolysis, *Data processing), (*Electron spin resonance, Data processing), Chemical reaction kinetics, Computers, Pulsed irradiation, Radiation chemistry, Recording systems.

For abstract, see NSA 30 04, number 09167.

TID-26590 PC$12.50/MF$2.25
Maryland Univ., College Park Dept. of Chemical Engineering.
KINETICS OF THE RADIATION INDUCED DECOMPOSITION OF SODIUM NITRATE.
A. Frances. 1974, 189p

Descriptors: (*Sodium nitrates, *Radiolysis), Chemical reaction kinetics, Color centers, G value, Gamma radiation, Phase transformations, Quantity ratio, Temperature dependence.

For abstract, see NSA 30 05, number 12316.

TID-26593 PC$4.00/MF$2.25
Maryland Univ., College Park Dept. of Chemical Engineering.
RADIATION INDUCED DECOMPOSITION OF INORGANIC MOLECULAR IONS. PROGRESS REPORT.
E. R. Johnson. 5p
Contract AT(40-1)-3660

Descriptors: (*Sodium nitrates, *Radiolysis), (*Nitrogen fixation, *Research programs), Chemical reaction kinetics, Color centers, G value, Gamma radiation, Radiation chemistry, Temperature dependence.

For abstract, see NSA 30 05, number 12317.

UCID-15644-74-1 PC$5.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
GENERAL CHEMISTRY DIVISION QUARTERLY REPORT, JANUARY--MARCH 1974.
J. E. Harrar. 36p
Contract W-7405-eng-48

Descriptors: (*Uranyl compounds, *Volatility), (*Thorium, *Oxidation), (*Uranium alloys, *Evaporation), (*Rhenium alloys, Evaporation), Chlorides, Intermetallic compounds, Ion selective electrode analysis, Research programs.

For abstract, see NSA 30 04, number 09220.

UCID-16087 PC$4.25/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
BIBLIOGRAPHY ON RADIATION EFFECTS ON PRIMARY AND SECONDARY EXPLOSIVES AND ON PROPELLANTS.
B. M. Dobratz. 20 Jul 72, 25p
Contract W-7405-eng-48

Descriptors: (*Explosives, *Bibliographies), Alpha particles, Chemical radiation effects, Gamma radiation, Neutrons, X radiation.

For abstract, see NSA 30 04, number 09168.

8. EARTH SCIENCES AND OCEANOGRAPHY

8B. Cartography

AD-783 519/2GA PC$6.00/MF$2.25
Royal Coll of Art London (England) Experimental Cartography Unit
CARTOGRAPHIC PERFORMANCE: AN EVALUATION OF ORTHOPHOTOMAPS.
Final technical rept. Sep 70-Mar 74,
Adrian R. Hill. Mar 74, 238p
Contract DAJA37-70-C-2398

Descriptors: *Mapping, *Orthophotography, Experimental design, Multivariate analysis, Aerial photography, Topographic maps, Great Britain.

The report describes a series of behavioral studies, using British Army personnel, on a number of different orthophotomap products. User performance with six graphic forms of orthophotomaps each surprinted with two levels of annotation was examined in three environmental settings. This included performance under high and low levels of illumination in the map-room, and day-time performance in the field. The performance tasks concentrated on the user's ability to detect, identify and recognize various features depicted on the map; including object identification, height estimation and terrain visualization for the map-room studies, and direction orientation, self location and map/field intercorrelations in the field study. (Modified author abstract)

AD-783 660/4GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
MODERN EQUIPMENT AND TECHNOLOGY OF PREPARING MAPS FOR PUBLICATION AND PHOTOREPRODUCTION PROCESSES,
E. G. Sergunin, and V. N. Filin. 12 Apr 74, 18p
Rept no. FSTC-HT-23-161-74
Trans. of Geodeziya i Kartografiya (USSR) n1 p56-63 1973.

Descriptors: *Mapping, Equipment, Engraving, Translations, USSR.

New methods, equipment, and materials for the preparation of maps for publication, developed in the FRG, Holland, the United States, Hungary, Great Britain, and Japan, are described.

AD-783 745/3GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
RECODING INFORMATION FROM AUTOMATED STEREOCOMPARATORS INTO COMPUTER CODE,
G. V. Lazarev, V. K. Smirnov, and A. M. Bobriaskov. 19 Mar 74, 10p Rept no. FSTC-HT-23-1043-72
Trans. of Geodeziya i Kartografiya (USSR) n8 p40-45 1971.

Descriptors: *Stereomapping, *Comparators, *Computer applications, Computer programming, Translations, USSR.

AD-783 830/3GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
LEVELING OF ELEVATIONS IN BLOCKS COMPILED FROM FLIGHT-LINE NETS IN PHOTOTRIANGULATION,
V. A. Shulman. 1 Apr 74, 11p Rept no. FSTC-HT-23-1564-73
Trans. of Geodeziya i Kartografiya (USSR) n7 p39-43 1972.

Descriptors: *Photogrammetry, *Mapping, Geodesy, Computer applications, Translations, USSR.
Identifiers: Minsk 22 computers.

Formulation of a program for the Minsk-22 computer capable of plotting a block net of three-dimensional phototriangulation from flight-line nets of arbitrary direction is described. The maximum number of flight-line nets is 12.

E74-10669 PC$4.50/MF$2.25
Cold Regions Research and Engineering Lab., Hanover, N.H.
NEW ENGLAND RESERVOIR MANAGEMENT: LAND USE/VEGETATION MAPPING IN RESERVOIR MANAGEMENT (MERRIMACK RIVER BASIN).
Interim contract rept.,
Saul Cooper, Harlan L. McKim, Lawrence W. Gatto, Carolyn J. Merry, and Duwayne M. Anderson. 14 Jun 74, 30p NASA-CR-139239
Contract NASA Order T-4646-B
Original contains imagery. Original photography may be purchased from the EROS Data Center, 10th and Dakota Ave., Sioux Falls, S.D. 57198.

Descriptors: Land use, Vegetation, Photomapping, Reservoirs, Massachusetts, New Hampshire, EREP, Skylab program, Multispectral band scanners, Aerial photography.

The author has identified the following significant results. It is evident from this comparison that for land use/vegetation mapping the S190B Skylab photography compares favorably with the RB-57 photography and is much superior to the ERTS-1 and Skylab 190A imagery. For most purposes the 12.5 meter resolution of the S190B imagery is sufficient to permit extraction of the information required for rapid land use and vegetation surveys necessary in the management of reservoir or watershed. The ERTS-1 and S190A data products are not considered adequate for this purpose, although they are useful for rapid regional surveys at the level I category of the land use/vegetation classification system.

E74-10685 PC$4.25/MF$2.25
Sheffield Univ. (England). Dept. of Geography.
AN EVALUATION OF EREP (SKYLAB) AND ERTS IMAGERY FOR INTEGRATED NATURAL RESOURCES SURVEY,
J. L. Van Genderen. Sep 73, 25p NASA-CR-139252

Descriptors: Resources management, Mapping, Land use, Photographic recording, Photointerpretation, EREP, Skylab program, Imaging techniques, Data processing.

The author has identified the following significant results. An experimental procedure has been

devised and is being tested for natural resource surveys to cope with the problems of interpreting and processing the large quantities of data provided by SKYLAB and ERTS. Some basic aspects of orbital imagery such as scale, the role of repetitive coverage, and types of sensors are being examined in relation to integrated surveys of natural resources and regional development planning. Extrapolation away from known ground conditions, a fundamental technique for mapping resources, becomes very effective when used on orbital imagery supported by field mapping. Meaningful boundary delimitations can be made on orbital images using various image enhancement techniques. To meet the needs of many developing countries, this investigation into the use of satellite imagery for integrated resource surveys involves the analysis of the images by means of standard visualphotointerpretation methods.

E74-10686 PC$4.00/MF$2.25
Sheffield Univ. (England). Dept. of Geography.
STEREO STUDY AS AN AID TO VISUAL ANALYSIS OF ERTS AND SKYLAB IMAGES,
J. L. van Generen. Oct 73, 1p NASA-CR-139253

Descriptors: Imaging techniques, Photointerpretation, Steroscopic vision, Data processing, EREP, Skylab program, Photogrammetry, Photogeology, Terrain analysis.

The author has identified the following significant results. The parallax on ERTS and SKYLAB images is sufficiently large for exploitation by human photointerpreters. The ability to view the imagery stereoscopically reduces the signal-to-noise ratio. Stereoscopic examination of orbital data can contribute to studies of spatial, spectral, and temporal variations on the imagery. The combination of true stereo parallax, plus shadow parallax offer many possibilities to human interpreters for making meaningful analyses of orbital imagery.

JPRS-62251 PC$4.50/MF$2.25
Joint Publications Research Service, Arlington, Va.
STATISTICAL METHODS OF STUDYING NATURAL OBJECTS,
G. A. Sergeev, and D. A. Yanutsh. 17 Jun 74, 118p Trans. of mono. Statisticheskie Metody Issledovaniya Prirodnykh Obektov, Leningrad, 1973 p85-153, 172-185, 215-236.

Descriptors: *Topographic features, Statistical analysis, Stochastic processes, Topography, Aerial photography, Hydrology, Remote sensing, Translations, USSR.

Contents:
- Realizations of random brightness fields of natural terrain;
- Studies of statistical structure of aerial topography;
- Statistical methods of analyzing hydrological data;
- Use of statistical characteristics of natural objects for processing information obtained with remote receivers.

8C. Dynamic Oceanography

AD-783 593/7GA Reprint
Woods Hole Oceanographic Institution Mass
OBSERVATIONS OF LOW-FREQUENCY CURRENT FLUCTUATIONS ON THE CONTINENTAL SLOPE AND RISE NEAR SITE D.
Technical rept.,
William J. Schmitz, Jr. 13 Feb 74, 24p Rept nos. WHOI-74-53, WHOI-Contrib-3210
Contract N00014-66-C-0241
Revision of report dated 18 Oct 73.
Availability: Pub. in Jnl. of Marine Research, v32 n2 p233-251 1974.

Descriptors: *Ocean currents, *North Atlantic Ocean, Continental shelves, Flowmeters, Networks, Low frequency, Ocean bottom, Depth.
Identifiers: Continental slopes.

An array of near-bottom current meters was set on the continental rise and slope near Site D in the autumn, 1970. At the junction of the slope and rise and over the slope the low-frequency flow was predominantly along depth contours, and flow across depth contours was dominated by higher frequencies. The low-frequency kinetic energy decays in both directions away from a mooring position near the slope-rise junction. The low-frequency variability is coherent along and incoherent across depth contours for 25 km separations, and coherent in both directions over fractions of a km. There is marginally significant evidence for westward (in the topographic sense) phase propagation at roughly 40 cm/s with wavelength in this direction of about 600 km. (Modified author abstract)

AD-783 720/6GA Reprint
Louisiana State Univ Baton Rouge Coastal Studies Inst
STANDING WAVES ON BEACHES.
Technical rept.,
Joseph N. Suhayda. 16 Apr 74, 10p Rept no. TR-167
Contract N00014-69-A-0211-0003
Revision of report dated 11 Feb 74.
Availability: Pub. in Jnl. of Geophysical Research, v79 n21 p3065-3071, 20 Jul 74.

Descriptors: *Beaches, *Standing waves, Measurement, Power spectra, Reflection, Detectors, Coherence, Mathematical prediction, Mexico.
Identifiers: Baja California.

Simultaneous measurements of run-up spectra and nearshore wave spectra associated with standing waves have been made on a natural beach. Digital wave staffs and bottom-mounted pressure sensors were placed in a line at various distances offshore from a digital run-up meter. The run-up meter, which measured the position of the edge of the water, consisted of a series of electrical contacts suspended above the beach face face and spaced 30 cm apart. Because of the possible influence of nonlinear interactions on the spectra, bicoherence was estimated, and the frequency range appropriate to a linearized model was defined. (Modified author abstract)

AD-783 904/6GA PC$4.50/MF$2.25
Physical Dynamics Inc Mclean Va
ELECTROMAGNETIC NOISE INDUCED BY OCEAN WAVES: I. ELECTROMAGNETIC FIELD INDUCED BY PROGRESSIVE OCEAN WAVES.
Semi-Annual technical rept.,
Walter Podney. Mar 74, 104p Rept no. PD-74-060 RADC-TR-74-131
Contract F30602-72-C-0495, ARPA Order-1649

Descriptors: *Ocean waves, *Electromagnetic fields, Noise(Electrical and electromagnetic), Electromagnetic properties.
Identifiers: *Electromagnetic noise.

The report begins by presenting a general solution for the electromagnetic field induced by an irrotational flow field using Ampere's law and Faraday's law and show that fields are determined by an electromagnetic potential function and a velocity potential function. Then it determines solutions corresponding to progressive waves in a horizontally stratified ocean. It investigates fields produced by progressive waves in a deep ocean and then considers fields produced by progressive waves in shallow seas. In each case, it presents fields produced by both surface and internal waves in both polar and equatorial regions. Finally, it gives complete expressions for electromagnetic potential functions corresponding to surface and internal waves.

COM-74-11411/7GA PC$4.00/MF$2.25
National Oceanographic Instrumentation Center, Washington, D.C.
INDEX TO NATIONAL OCEANOGRAPHIC INSTRUMENTATION CENTER INSTRUMENT. FACT SHEETS.
Jun 74, 17p IFS-74010

Descriptors: *Oceanographic data, *Measuring instruments, Wave recorders(Water waves), Ocean currents, Temperature measuring instruments, Pressure gages, Underwater sound equipment, Indexes(Documentation).
Identifiers: *Oceanographic equipment.

The portion of the index lists all IFSs concerning oceanographic and related equipment evaluated by the center, the first having been published in May 1964. The IFS index is categorized in terms of (1) a chronological listing under equipment class and (2) on overall chronological listing of all Instrument Fact Sheets published to date.

COM-74-11414/1GA PC$4.00/MF$2.25
National Oceanographic Instrumentation Center, Washington, D.C.
MODEL RS 100 PORTABLE WAVE RECORDER, INTERSTATE ELECTRONICS CORP., ANAHEIM, CALIF. 92803.
Instrumentation fact sheet.
May 74, 13p IFS-74009 NOAA-74071901

Descriptors: *Wave recorders(Water waves), *Ocean waves, Test methods, Portable equipment, Electrical properties, Environmental tests, Specifications, Accuracy, Instrument characteristics.
Identifiers: *Oceanographic equipment.

The Model RS100, Portable Wave Recorder consists of a wave staff and a remote electronics assembly. The recorder is a Rustrak Instrument Co. Inc., Model 88, which has a galvanometer-based movement and records wave profiles as a series of closely spaced dots on pressure-sensitive paper. Information is given on performance specifications and performance tests.

COM-74-50751/8GA MF$2.25
National Oceanic and Atmospheric Administration, Boulder, Colo. Wave Propagation Lab.
ECONOMIC APPRAISAL OF REAL-TIME SYNOPTIC SEA-STATE MEASUREMENTS BY OVER-THE-HORIZON RADAR.
Technical rept.,
R. S. Rhodes, and R. B. Chadwick. May 74, 82p NOAA-TR-ERL-299, WPL-32 NOAA-74071711
Paper copy available from GPO $1.15.

Descriptors: *Oceanographic data, *Sea states, Surface roughness, Ocean surface, Radar, Over the horizon detection, Benefit cost analysis, Economic analysis, Measuring instruments, Instrument characteristics.
Identifiers: Over the horizon radar.

The report is intended as a general assessment of the potential utility of an over-the-horizon (OTH) sea-state radar system. Chapter 1 defines the nature of the ocean surface, identified the major segments of the U.S. economy that are affected by sea-state advisory services, and discusses the nature of the present data services. Chapter 2 is a technical description the OTH radar system, its expected performance, its costs, and its alternative site considerations. Several alternatives to OTH radar for sea-state measurements are discussed in Chapter 3 to put the concept of the radar somewhat in perspective with frequently mentioned alternatives. Chapter 4 defines an array of optional elements of an OTH sea-state radar system, and assesses the cost and benefit of each option. Finally, a short summary of the findings and recommendations are presented in Chapter 5.

COM-74-90018-03/GA MF$2.25
National Oceanic and Atmospheric Administration, Washington, D.C. Environmental Data Service.

MARINERS WEATHER LOG, VOLUME 18, NUMBER 3.
Bimonthly rept.,
Elwyn E. Wilson. May 74, 80p NOAA-74060501
Paper copy available from Environmental Data Service, 3300 Whitehaven St., N.W., Washington, D.C. 20235. Free.

Descriptors: *Ocean waves, *Ocean currents, *Navigation, *Meteorological satellites, *Great Lakes, Atmospheric circulation, Storms, Eddies, Sargasso Sea, Saint Lawrence Gulf, Infrared mapping, Atlantic Ocean, Meteorological data, Precipation(Meteorological), Ice reporting.
Identifiers: NOAA-2 satellite, Gulf Stream.

In addition to its regular sections, this issue contains the following articles: Cape Rollers--Unusually High Swells Off the South African Coast; A Satellite-derived Experimental Gulf Stream Analysis; Infrared and Visible Imagery of the Atlantic Off the East Coast of the United States Following the March 1973 Monster of the Month; and Great Lakes Navigation Season, 1973.

COM-74-90018-03-01/GA
(Order as COM-74-90018-03)
National Climatic Center, Asheville, N.C.
CAPE ROLLERS - UNUSUALLY HIGH SWELLS OFF THE SOUTH AFRICAN COAST,
Robert G. Quayle. 1974, 5p NOAA-74060501-1
Included in Mariners Weather Log, v18 n3 p145-148 May 74, COM-74-90018-03.

Descriptors: *Ocean waves, South Africa, Height, Atmospheric circulation, Storms, South Atlantic Ocean, Indian Ocean.
Identifiers: *Cape rollers.

Cape Rollers, unusually high swells observed off the South African Coast 30 degrees-40 degrees S, 20 degrees-30 degrees E were analyzed by use of quasi-objective methods and wave heights were computed for Marsden Square 441. The data indicate that, on the average, a significant wave height of 61 ft. will be reached or exceeded once every 10 years. A study of the general circulation of this area offers some insight into its wind and wave patterns.

COM-74-90018-03-02/GA
(Order as COM-74-90018-03)
National Environmental Satellite Service, Washington, D.C.
A SATELLITE-DERIVED EXPERIMENTAL GULF STREAM ANALYSIS,
Harry G. Stumpf. 1974, 5p NOAA-74060501-2
Included in Mariners Weather Log, v18 n3 p149-152 May 74, COM-74-90018-03.

Descriptors: *Ocean currents, North Atlantic Ocean, Spaceborne photography, Charts, Eddies, Meteorological satellites, Sargasso Sea, Water masses.
Identifiers: NOAA-2 satellite, *Gulf Stream.

Experimental Gulf Stream analysis facsimile charts for January 21-22, October 23-28, and November 3-6, 1973, are shown. These are derived from NOAA-2 satellite thermal infrared Very High Resolution Radiometer.

COM-74-90018-03-03/GA
(Order as COM-74-90018-03)
National Environmental Satellite Service, Washington, D.C.
INFRARED AND VISIBLE IMAGERY OF THE ATLANTIC OFF THE EAST COAST OF THE UNITED STATES FOLLOWING THE MARCH, 1973 MONSTER OF THE MONTH,
Paul E. La Violette, and Alan E. Strong. 1974, 3p NOAA-74060501-3
Prepared in cooperation with Naval Oceanographic Office, Washington, D.C.
Included in Mariners Weather Log, v18 n3 p152-153 May 74, COM-74-90018-03.

Descriptors: *Ocean currents, Spaceborne photography, Saint Lawrence Gulf, Eddies, Infrared mapping, Visual surveillance, Atlantic Ocean, Meteorological satellites, Storms.
Identifiers: NOAA-2 satellite, Gulf Stream.

Two figures show the eastern Atlantic Ocean and the east coast of the United States as seen by the thermal-infrared and the visible channels of the NOAA-2 Very High Resolution Radiometer (VHRR) on March 25, 1973. The two images demonstrate the different information that is available from the satellite sensor's two channels.

8E. Geodesy

AD-783 662/0GA PC$4.25/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
COMPARISON OF VARIOUS METHODS OF FLIGHT-LINE THREE-DIMENSIONAL ANALYTIC PHOTOTRIANGULATION,
I. T. Antipov. 12 Apr 74, 22p Rept no. FSTC-HT-23-174-74
Trans. of Geodesiya i Kartografiya (USSR) n10 p37-48 1972.

Descriptors: *Photogrammetry, *Triangulation, Three dimensional, Aerial photography, Geodesy, Translations, USSR.

Proposed analytic methods of flight-line phototriangulation are systematized and their results in identical conditions are compared. The element of leveling is used to distinguish analytic methods of three-dimensional phototriangulation: either tie-ins of projected rays, or a ground model.

AD-783 763/6GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
FIFTY YEARS OF THE ASTROGEODETIC NETWORK OF THE USSR,
A. Z. Sazanov. 2 May 74, 11p Rept no. FSTC-HT-23-0213-74
Trans. of Geodeziya i Kartografiya (USSR) n12 p13-17 1972.

Descriptors: *USSR, *Photogrammetry, *Mapping, *Geodesy, Reviews, Triangulation, Translations.

The Soviet astrogeodetic network system over the past fifty years is discussed. It is the most complex and extensive in the world and was carried out by great numbers of geodesists in difficult geographical conditions. However, in spite of the huge area covered, the errors in first-class and second-class triangulation and other survey work are minimal.

8F. Geography

AD-783 710/7GA PC$3.00/MF$2.25
Environmental Research Inst of Michigan Ann Arbor
BASIC INVESTIGATIONS FOR REMOTE SENSING OF COASTAL AREAS.
Quarterly rept. 15 Apr-15 Jul 74,
Robert K. Vincent. 26 Jul 74, 6p Rept no. ERIM-108900-1-L
Contract N00014-74-C-2073

Descriptors: *Coastal regions, *Radar mapping, Beaches, Rivers, Ocean bottom, Radar images, Multispectral.
Identifiers: *Remote sensing.

The purpose of this contract is to investigate remote sensing methods for monitoring coastal areas. The effort is divided into three tasks, involving research on: Compositional mapping of beaches and river systems; multispectral radar imaging for coastal mapping; and enhancement of ocean bottom features with passive multispectral scanners. During the first quarter, significant progress was made on tasks 1 and 3, but work on task 2 has just begun, with nothing reportable as yet.

E74-10676 PC$4.00/MF$2.25
Texas A and M Univ., College Station. Remote Sensing Center.
MONITORING THE VERNAL ADVANCEMENT AND RETROGRADATION (GREEN WAVE EFFECT) OF NATURAL VEGETATION.
Progress rept. 28 Mar-27 May 74,
J. W. Rouse, Jr. 27 May 74, 8p PR-7 NASA-CR-139243
Contract NAS5-21857

Descriptors: Green wave effect, Grasslands, Rangelands, Vegetation growth, Great plains corridor(North America), Earth resources program, Remote sensors, Data processing.

The author has identified the following significant results. From the data that have been analyzed thus far, it is apparent that certain parameters of the vegetation (green biomass and vegetation moisture content) are well correlated with ERTS data at some sites, yet the relationship is poor at other locations. The analyses indicated that the green wave development (spring) can be readily detected in the Great Plains Corridor. Consequently, ERTS-1 data provide a new tool for monitoring range readiness on a regional basis. The onset of summer drought and its duration can also be monitored. Data from ten G.P.C. sites suggest that the satellite coverage has been adequate to monitor the status of rangeland vegetation for regional management purposes.

8G. Geology and Mineralogy

AD-783 488/0GA PC$3.00/MF$2.25
Army Electronics Command Fort Monmouth N J
DIELECTRIC DISPERSIVE PROPERTIES OF SUBSURFACE ROCK AT A BURIED ANTENNA SITE.
Interim rept.,
William H. Hulse, Jr. Jul 74, 8p Rept no. ECOM-4232

Descriptors: *Radio transmission, *Rock, Dielectric properties, Subsurface, Underground antennas, Electrical properties, Dispersing.
Identifiers: Aporhyolite.

The electrical properties of rock specimens collected from the surface and subsurface of a buried antenna site were measured to provide information for calculating electromagnetic wave propagation constants for modeling and assaying antenna performance. The rock is aporhyolite exhibiting intense metasomatic alteration; the principal mineral constituents are epidote and sericite. The parameters (dielectric constant, dissipation factor, and effective conductivity) were measured in the range 10-100 kHz for both dry and moist conditions. These rock specimens when moist exhibited high dielectric constants and considerable dispersion at lower frequencies. (Author)

AD-783 577/0GA PC$6.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
METHODS AND MEANS OF RECORDING THE EFFECTS OF EXPLOSIONS IN ROCKS,
M. F. Drukovanyi, and L. F. Petryashin. 6 Jun 74, 228p Rept no. FTD-HC-23-1610-74
Edited trans. of mono. Metody i Sredstva Registratsii Deistviya Vzryva v Gornykh Porodakh, n.p., p1-154 1971.

Descriptors: *Rock, *Explosion effects, Underground explosions, Seismic waves, Wave propagation, Test equipment, Translations, USSR.

Methods for investigating the effects of explosions in rocks are considered. Criteria in simulating the destructive process are proposed. Methods of forming the explosive pulse, the principles of

behavior of rocks near the charge cavity, the propagation of the stress field and the effect of boundary conditions on its nature are presented.

EIR-252 PC$4.75/MF$2.25
Eidgenoessisches Inst. fuer Reaktorforschung, Wuerenlingen (Switzerland).
THORIUM, URANIUM, OTHER METALS, AND MATERIALS FROM EARTH'S CRUST ROCKS.
M. Taube. Apr 74, 33p
U.S. Sales Only.

Descriptors: (*Thorium, *Availability), (*Uranium, Availability), Cements, Ceramics, Fuel cycle, Glass, Quartz, Rocks.

For abstract, see NSA 30 04, number 09478.

GJO-7403 PC$6.25/MF$2.25
Delaware Geological Survey, Newark.
SURVEY OF NONMARINE CRETACEOUS SEDIMENTS OF NEW JERSEY, DELAWARE, AND MARYLAND AND THEIR URANIUM-BEARING POTENTIALS.
R. R. Jordan. Jun 70, 63p
Contract AT(30-1)-4087

Descriptors: (*Uranium deposits, *Exploration), (*New jersey, *Geologic deposits), (*Delaware, Geologic deposits), (*Maryland, Geologic deposits), Geology, Uranium ores.

For abstract, see NSA 30 05, number 12664.

GJO-7404 PC$6.75/MF$2.25
Rensselaer Polytechnic Inst., Troy, N.Y.
U, K, AND TH CONCENTRATIONS IN DEVONIAN SEDIMENTARY ROCKS OF THE CATSKILL MOUNTAIN AREA AND THEIR INTERPRETATION.
J. H. Jr. Way, and G. M. Friedman. 14 May 71, 73p
Contract AT(30-1)-3982

Descriptors: (*New york, *Uranium deposits), (*Uranium, *Natural occurrence), (*Potassium, Natural occurrence), Abundance, Ore composition, Pennsylvania, Sedimentary rocks, Thorium.

For abstract, see NSA 30 04, number 09480.

GJO-7405 PC$7.25/MF$2.25
South Carolina Univ., Columbia Dept. of Geology.
PERMO-CARBONIFEROUS DEPOSITIONAL ENVIRONMENTS AND RADIOACTIVITY IN EASTERN UNITED STATES.
J. C. Ferm, and M. C. Galloway. 31 May 71, 81p

Descriptors: (*Usa, *Uranium deposits), (*Uranium ores, *Prospecting), Abundance, Geology, Natural radioactivity, Porosity, Sandstones, Stratigraphy, Uranium.

For abstract, see NSA 30 05, number 12665.

GJO-7406 PC$4.25/MF$2.25
Rensselaer Polytechnic Inst., Troy, N.Y. Dept. of Geology.
RADIOACTIVE TRACE ELEMENTS IN MIDDLE AND UPPER DEVONIAN CLASTIC ROCKS, CATSKILL MOUNTAIN AREA, NEW YORK.
J. H. Jr. Way, and G. M. Friedman. 1972, 25p
Contract AT(30-1)-3982

Descriptors: (*New york, *Uranium deposits), (*Uranium, *Natural occurrence), (*Thorium, Natural occurrence), Abundance, Ore composition, Potassium, Sandstones, Sedimentary rocks.

For abstract, see NSA 30 04, number 09481.

GJO-7407 PC$4.00/MF$2.25
Rensselaer Polytechnic Inst., Troy, N.Y. Dept. of Geology.
RADIOACTIVE TRACE ELEMENTS IN UPPER DEVONIAN CLASTIC ROCKS, NORTH-CENTRAL PENNSYLVANIA.
M. Humphreys, and G. M. Friedman. 1972, 15p
Contract AT(30-1)-3982

Descriptors: (*Pennsylvania, *Uranium deposits), (*Potassium, *Natural occurrence), (*Uranium, Natural occurrence), Abundance, Ore composition, Sedimentary rocks, Thorium.

For abstract, see NSA 30 04, number 09482.

PB-234 060/2GA PC$3.00/MF$2.25
Bureau of Mines, Washington, D.C.
PROPERTIES OF UTAH TAR SANDS-THREEMILE CANYON AREA, P. R. SPRING DEPOSIT.
Rept. of investigations,
L. C. Marchant, L. A. Johnson, and C. Q. Cupps.
Jun 74, 19p BuMines-RI-7923
Prepared by Laramie Energy Research Center, Wyo.

Descriptors: *Bituminous sands, *Drill core analysis, Properties, Permeability, Porosity, Oil sands, Oil reservoirs, Utah, Threemile Canyon, Uinta Basin.

Results of detailed analyses of four cores from the Threemile Canyon area in the P.R. Spring tar sand deposit in Utah are reported. The cores were obtained by the Utah Geological and Mineralogical Survey as part of a 17-corehole evaluation program in the P.R. Spring, Hill Creek, and Rim Rock tar sand deposits. Average properties of the oil zone in the Threemile Canyon area as determined from these cores are as follows: Oil saturation, 67.4 percent of pore volume, porosity, 29.2 percent; permeability before oil extraction, 133 millidarcies; and permeability after oil extraction, 2,855 millidarcies. Average net thickness of the oil zone is 23.8 feet and average depth to the top of the oil zone is 189 feet.

TID-26582 PC$4.25/MF$2.25
USAEC Grand Junction Office, Colo. Resource Investigation Div.
MAGNETIC SUSCEPTIBILITY AND GEOCHEMICAL RELATIONSHIPS AS URANIUM PROSPECTING GUIDES.
J. R. Ellis, S. R. Austin, and R. F. Droullard. Nov 68, 24p

Descriptors: (*Uranium ores, *Aerial prospecting), (*Soils, *Magnetic susceptibility), Abundance, Gamma radiation, Gamma spectroscopy, Geomagnetic field, Potassium, Spectrometers, Thorium 232, Uranium oxides u3o8, Uranium 238.

For abstract, see NSA 30 05, number 12666.

TT-73-58018 PC$11.00/MF$2.25
Bureau of Mines, Washington, D.C.
DIFFERENTIAL THERMAL ANALYSIS OF CARBONATE MINERALS,
A. I. Chvetkov, E. P. Valashikhina, and G. O. Piloyau. 1974, 157p
Trans. of mono. Differentsialnyi Termicheskii Analiz Karbonatnykh Minralov, Moscow, 1964. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Project.

Descriptors: *Carbonate minerals, *Differential thermal analysis, Translations, USSR.

The class of carbonate deposits is exemplified by numerous minerals, many of which are widely distributed in nature. Many carbonates are accompanied with ores in the mineral deposits and mostly considered as raw material for the extraction of some metals and compounds. Generally, the role of this class of minerals to the national economy is extremely great. For sound interpretation of processes of technical treatment of carbonates and for the identification of their chemical constitution much emphasis is given to the study of their behaviour on heating. In this field, the most available methods are D.T.A. and T.G.A., as well as the other applied methods (chemical, X-ray and crystallo-optical analyses). The combined application of these methods can give more detailed information.

TT-73-58022 PC$7.50/MF$2.25
Bureau of Mines, Washington, D.C.
HYDROGEOLOGY OF OIL AND GAS DEPOSITS,
A. A. Kartsev. 1974, 343p
Trans. of mono. Gidrogeologiya Neftiyanykh i Gazovykh Mestorozhdenii, n.p., n.d. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Oil wells, *Gas wells, Hydrology, Ground water, Textbooks, Translations, USSR.

The book is written as a textbook for the course 'Hydrogeology and water of oilfield' presented to geologists of oil and gas specialization. Lectures, delivered by the author since 1953 in Moscow Institute of Petroleum Chemistry and Gas Industry 'Godkin', are considered as the basic material of this book. In the first part of the book, the main informations of general hydrogeology, specially pertinent to oil and gas specialists, are given. The main subject of the first part deals with the problem of underground water formation. Further, more specific hydrogeological problems related to oil and gas occurrence are encountered. Great attention is paid to hydrogeological conditions of both the formation and disintegration of oil-gas deposits. The second part is descriptive of oil-gas bearing artesian basins in U.S.S.R. containing oil-gas accumulations. The movement and formation of water and brines in these basins and their role in the formation and disintegration of the existing oil-gas deposits are of great interest.

UCRL-Trans-10737 PC$25.25/MF$2.25
DEEP SEISMIC SOUNDING. PAPERS PRESENTED AT THE SECOND ALL-UNION CONFERENCE ON THE STUDY OF THE EARTH'S CRUST AND UPPER MANTLE BY METHODS OF EXPLOSION SEISMOLOGY, ALMA-ATA, NOVEMBER 1969.
L. F. Egorova. 1969, 443p
Translated by A.M.A. Mincer from Glubinnoe seismicheskoe zondirovanie.

Descriptors: Chemical composition, Continental shelf, Earth crust, Earth planet, Earthquakes, Exploration, Explosions, Geologic deposits, Geology, Geophysics, Layers, Minerals, Oil stimulation, Ores, Petroleum, Petrology, Seas, Seismic detection, Seismic waves, Seismology, Shock waves, Ussr, Velocity.

For abstract, see NSA 30 05, number 14740.

UCRL-51592 PC$7.50/MF$2.25
California Univ., Berkeley Lawrence Berkeley Lab.
GEOLOGICAL AND SEISMOLOGICAL INVESTIGATION OF THE LAWRENCE LIVERMORE LABORATORY SITE.
L. H. Wight. 17 May 74, 90p

Descriptors: (*Lawrence livermore laboratory, *Geology), California, Earthquakes, Hazards, Mechanical structures, Safety, Seismology, Site selection.

For abstract, see NSA 30 05, number 12712.

WASH-1301 PC$7.60/MF$2.25
Newmark (Nathan M.) Consulting Engineering Services, Urbana, Ill.

CLASSIFICATION, ENGINEERING PROPERTIES, AND FIELD EXPLORATION OF SOILS, INTACT ROCK AND IN SITU ROCK MASSES.
W. J. Hall, N. M. Newmark, and A. J. Jr. Hendron. May 74, 263p
Contract AT(49-5)-2667

Descriptors: (*Reactor sites, *Geology), (*Soils, *Physical properties), (*Rocks, Physical properties), Geophysics, Mechanical structures, Nuclear power plants, Reactor safety, Seismology.

For abstract, see NSA 30 04, number 09566.

8H. Hydrology and Limnology

AAEC/E-286 PC$5.25/MF$2.25
Australian Atomic Energy Commission Research Establishment, Lucas Heights.
SITE EMERGENCY RELEASES AND SITE EMERGENCY STOCKS: RECOMMENDED VALUES FOR USE AT THE RESEARCH ESTABLISHMENT.
J. E. Cook. Mar 74, 41p
U.S. Sales Only.

Descriptors: (*Earth atmosphere, *Contamination), (*Food chains, *Radionuclide migration), (*Human populations, *Radiation doses), (*Nuclear facilities, *Radiation hazards), Australia, Maximum permissible concentration, Radioactive waste disposal, Radioactive wastes, Radioactivity, Reactor accidents, Research reactors.

For abstract, see NSA 30 04, number 09502.

BNWL-B-274 PC$4.00/MF$2.25
Battelle Pacific Northwest Labs., Richland, Wash.
INTERIM REPORT: THE FRACTIONAL AIRBORNE RELEASE OF DISSOLVED RADIOACTIVE MATERIALS DURING THE COMBUSTION OF 30 PERCENT NORMAL TRIBUTYL PHOSPHATE IN A KEROSENE-TYPE DILUENT.
J. Mishima, and L. C. Schwendiman. Jun 73, 16p
Contract A(45-1)-1830

Descriptors: (*Tbp, *Combustion), (*Uranium, *Radioactive waste disposal), (*Cesium, Radioactive waste disposal), (*Cerium, Radioactive waste disposal), Cerium 144, Cesium 137, Fires, Gaseous wastes, Iodine, Iodine 131, Kerosene, Purex process, Stack disposal, Tracer techniques, Zirconium, Zirconium 95.

For abstract, see NSA 30 04, number 09494.

BNWL-SA-4834 PC$4.00/MF$2.25
Battelle Pacific Northwest Labs., Richland, Wash.
RECOMMENDED METHODOLOGY FOR ENVIRONMENTAL SURVEILLANCE.
D. H. Denham. 11p CONF-740406-14
Contract AT(45-1)-1830

Descriptors: (*Environment, Radiation monitoring), (*Radiation monitoring, *Recommendations), Contamination, Monitoring, Nuclear facilities, Radiation protection, Radioactive waste disposal, Radioactive wastes, Us aec.

For abstract, see NSA 30 05, number 12682.

BNWL-SA-4837 PC$5.50/MF$2.25
Battelle Pacific Northwest Labs., Richland, Wash.
ATMOSPHERIC RAIN WASHOUT OF ELEMENTAL GASEOUS IODINE.
R. Mahalingam, J. M. Hales, and L. C. Schwendiman. 49p CONF-740705-2

Descriptors: (*Iodine isotopes, *Precipitation scavenging), (*Earth atmosphere, *Contamination), Fallout, Gaseous wastes, Loss of coolant, Mathematical models, Radioactive waste disposal, Reactor accidents, Stack disposal, Washout.

For abstract, see NSA 30 04, number 09495.

BNWL-tr-122 PC$4.00/MF$2.25
Battelle Pacific Northwest Labs., Richland, Wash.
COST-BENEFIT METHODS IN THE SECTOR OF HEALTH PHYSICS.
G. Bresson, F. Fagnani, and G. Morlat. 10 Jun 74, 19p CONF-740529-4
Translation of paper SM-184/29.

Descriptors: (*Radiation protection, *Cost benefit analysis), (*Human populations, Radiation protection), (*Personnel, Radiation protection), (*Nuclear power plants, *Radiation hazards), Environment, Feed materials production center, Ore processing, Radioactivity, Uranium ores.

For abstract, see NSA 30 05, number 12674.

BNWL-1811 PC$5.45/MF$2.25
Battelle Pacific Northwest Labs., Richland, Wash.
ENVIRONMENTAL SURVEILLANCE AT HANFORD FOR CY-1973.
W. L. Nees, and J. P. Corley. Apr 74, 85p
Contract AT(45-1)-1830

Descriptors: (*Hapo, *Radioactivity), (*Columbia river, *Pollution), (*Alpha sources, *Radiation monitoring), (*Beta sources, Radiation monitoring), Air, Cesium 137, Earth atmosphere, Environment, Fallout, Food, Gamma sources, Ground water, Human populations, Iodine 131, Milk, Nitrates, Plants, Plutonium, Radiation doses, Sampling, Strontium 90, Surface waters, Thermal effluents, Tritium, Uranium, Zinc 65.

For abstract, see NSA 30 04, number 09503.

COM-74-11418/2GA PC$4.50/MF$2.25
Illinois State Water Survey, Urbana.
HYDROLOGIC-ECONOMIC FEASIBILITY STUDY ON PRECIPITATION AUGMENTATION OVER THE GREAT LAKES.
Final rept.,
Glenn E. Stout, and William C. Ackermann. Mar 74, 30p NOAA-74072251
Grant NOAA-N22-207-72(G)

Descriptors: *Great Lakes, *Precipitation(Meteorology), *Cloud seeding, Water supply, Economic development, Marine transportation, Recreation, Electric power plants, Evaporation, Lake Michigan.
Identifiers: *Water levels.

Thirty-two million people live within the Great Lakes Region and depend heavily upon this resource for transportation, power production, water supply, and recreation. Large differences in lake levels create many social and economic problems. Every increase of one inch in water level permits an additional 110 tons of cargo on the freighters now in use and 225 tons on the larger vessels now under construction. A change in water level of one inch in Lake Michigan is equivalent to one-third of the diversion of water that is used for domestic and waste water dilution for the city of Chicago. The greatest benefit of the higher water levels is the energy producing capacity of the power industries. It was proposed that through cloud seeding one could recycle, the evaporative water which occurs when polar and arctic air masses cross the open water surface directly into the lake. Benefits would be greatest during the period of low lake levels. (Modified author abstract)

COM-74-11419/0GA PC$7.75/MF$2.25
Arizona Univ., Tucson. Dept. of Hydrology and Water Resources.
WORTH OF HYDROLOGIC DATA FOR SHORT-TERM FORECASTS OF FLOODS.
Final rept. 1 Jul 73-30 Jun 74,
Moshe Sniedovich, Donald R. Davis, and Lucien Duckstein. Jul 74, 93p NOAA-74072249
Grant NOAA-2-35108

Descriptors: *Floods, *Flood forecasting, Decision theory, Mathematical models, Policies, Hydrology, Dynamic programming, Damage.

The report puts the factors affecting the evaluation of short-term flood forecasts, which were developed in the previous years report (Sniedovich et al., 1973), into a formal decision model. The forecasting-response process is viewed as a stochastic multistage decision process. Decisions as to the response to flood forecasts are made sequentially in time on the basis of the information available and the state of the overall system at each decision time. This model is based on adaptive control theory; computation is done by the dynamic programming algorithm. The data and other input requirements of models are discussed. A one stage simplification of the model is developed for illustration and to provide a numerical example. It is shown that the decision model developed may serve as a tool for the design and evaluation of flood forecasting systems. (Modified author abstract)

COM-74-50695/7GA MF$2.25
National Ocean Survey, Detroit, Mich. Lake Survey Center.
GREAT LAKES WATER LEVELS 1973. DAILY AND MONTHLY AVERAGE WATER SURFACE ELEVATIONS.
May 74, 116p NOAA-74061901
Paper copy available from Lake Survey Center, 630 Federal Bldg. and U.S. Courthouse, Detroit, Mich. 48226, PC$2.50.

Descriptors: *Great Lakes, Tables(Data), Diurnal variations, Seasonal variations, Water meters, Networks.
Identifiers: *Water levels.

The publication contains Lake Survey Center Great Lakes water level gage records and shows in tabular form daily and monthly average levels for each gage in the network for the calendar year. It also contains, in a separate table, the highest and lowest daily average for the month. In addition, a frequency distribution table of daily average levels shows the number of times each month the recorded levels were above a specified elevation. The gages record water levels in either an analog or a digital form on strip charts which are retained for a period of ten years. Recorded hourly values were used to compute the daily averages and the monthly values were compiled from the daily averages. The diagram indicates the location of the recording water level gages. An index lists the gage location, identification number, and geographic co-ordinates. The stations are arranged by location and are in numerical order.

CONF-740212-3 PC$4.00/MF$2.25
Oak Ridge National Lab., Tenn.
MEASUREMENT OF RADON PROGENY CONCENTRATIONS IN AIR BY ALPHA-PARTICLE SPECTROMETRY.
G. D. Kerr. 1974, 10p

Descriptors: (*Radon, *Radiation monitoring), (*Alpha sources, Radiation monitoring), Air filters, Alpha spectroscopy, Daughter products, Dusts.

For abstract, see NSA 30 04, number 09536.

COO-1156-70 PC$6.75/MF$2.25
Colorado State Univ., Fort Collins Dept. of Radiology and Radiation Biology.
RADIOECOLOGY OF SOME NATURAL ORGANISMS AND SYSTEMS IN COLORADO. TWELFTH TECHNICAL PROGRESS REPORT, MAY 1, 1973--APRIL 30, 1974.
F. W. Whicker. 1 May 74, 74p
Contract AT(11-1)-1156

Descriptors: (*Plutonium 238, *Radioecological concentration), (*Plutonium 239, Radioecological concentration), (*Strontium 85, *Tissue distribu-

tion), Colorado, Diffusion, Plants, Radionuclide migration, Rocky flats plant, Soils, Wild animals, Aquatic ecosystems, Cesium 137, Deer, Fallout deposits, Fishes, Lakes, Radioactivity, Radionuclide kinetics, Surface waters, Terrestrial ecosystems, Diet, Food chains, Grass, Grasshoppers, Phosphorus 32, Photosynthesis, Tracer techniques, Biological radiation effects, Chemical radiation effects, Chronic irradiation, Gamma sources, Microorganisms.

For abstract, see NSA 30 04, number 09504.

COO-1495-24 PC$4.75/MF$2.25
Purdue Univ., Lafayette, Ind.
MOVEMENT OF STRONTIUM THROUGH THE SOIL TO THE PLANT ROOT MEMBRANE. PROGRESS REPORT, SEPTEMBER 1, 1973--AUGUST 31, 1974.
S. A. Barber, and G. L. Malzer. 1974, 33p
Contract AT(11-1)-1495

Descriptors: (*Calcium 45, *Diffusion), (*Strontium 85, Diffusion), (*Soils, *Radionuclide migration), (*Plants, *Radionuclide kinetics), Calcium, Chelates, Root absorption, Strontium.

For abstract, see NSA 30 04, number 09543.

COO-2053-3 PC$8.75/MF$2.25
Colorado State Univ., Fort Collins Fluid Dynamics and Diffusion Lab.
GASEOUS DISPERSION INTO STRATIFIED BUILDING WAKES.
B. T. Yang, and R. N. Meroney. Aug 70, 114p
Contract AT(11-1)-2053

Descriptors: (*Gaseous wastes, *Aerodynamics), (*Gaseous diffusion, *Measuring methods), (*Nuclear facilities, *Radioactive wastes), Air pollution, Buildings, Earth atmosphere, Krypton 85, Leaks, Radionuclide migration, Stack disposal, Tracer techniques, Wind tunnels.

For abstract, see NSA 30 04, number 09496.

COO-2160-9 PC$10.25/MF$2.25
Wisconsin Univ., Milwaukee Center for Great Lakes Studies.
INVESTIGATION OF THE INFLUENCE OF THERMAL DISCHARGE FROM A LARGE ELECTRIC POWER STATION ON THE BIOLOGY AND NEARSHORE CIRCULATION OF LAKE MICHIGAN. PART A. BIOLOGY. FINAL REPORT, 1 AUGUST 1971--31 JULY 1973.
A. M. Beeton, and J. M. Barker. 1973, 141p
Contract AT(11-1)-2160

Descriptors: (*Fossil-fuel power plants, Thermal effluents), (*Lake michigan, *Thermal pollution), (*Thermal effluents, *Biological effects), Carbon 14, Chlorophyll, Plankton.

For abstract, see NSA 30 04, number 09567.

COO-3011-3 PC$6.75/MF$2.25
Helsinki Univ. (Finland). Dept. of Radiochemistry.
RADIOACTIVE FOODCHAINS IN THE SUBARCTIC ENVIRONMENT. TECHNICAL PROGRESS REPORT, 15 AUGUST 1973--14 AUGUST 1974.
R. K. Clayton. 1974, 73p
Contract AT(11-1)-3011

Descriptors: (*Lichens, *Radionuclide kinetics), (*Deer, Radionuclide kinetics), (*Man, Radionuclide kinetics), (*Cesium 137, *Radioecological concentration), Fallout, Finland, Food chains, Lapps, Plutonium 238, Plutonium 239, Plutonium 240, Research programs.

For abstract, see NSA 30 04, number 09505.

COO-3180-12 PC$6.00/MF$2.25
Columbia Univ., Palisades, N.Y. Lamont-Doherty Geological Observatory.
RADIOISOTOPES AND OCEANIC MIXING. TECHNICAL PROGRESS REPORT.
W. S. Broecker. May 74, 60p
Contract AT(11-1)-3180

Descriptors: (*Oceanography, *Research programs), (*Atlantic ocean, *Mixing), (*Radon 222, *Distribution), (*Pacific ocean, Mixing), Coastal waters, Data processing, Depth, Nitrogen oxides, Radioactive waste disposal, Salinity, Temperature distribution.

For abstract, see NSA 30 04, number 09546.

DPSP-55-25-34(Del.) PC$4.75/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Atomic Energy Div.
REGIONAL MONITORING GROUP, HEALTH PHYSICS SECTION SEMIANNUAL PROGRESS REPORT, JULY--DECEMBER 1954.
J. H. Horton. Sep 55, 33p

Descriptors: (*Savannah river plant, *Fallout), (*South carolina, *Radioactivity), (*Surface waters, *Radiation monitoring), (*Plants, Radiation monitoring), Animals, Beta sources, Drinking water, Earth atmosphere, Iodine, Plutonium, Potassium 40, Radioactive waste disposal, Radioactive wastes, Rain, Savannah river, Uranium.

For abstract, see NSA 30 04, number 09506.

DPSP-56-25-13(Del.) PC$5.25/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Atomic Energy Div.
REGIONAL MONITORING GROUP, HEALTH PHYSICS SECTION SEMIANNUAL PROGRESS REPORT, JANUARY--JUNE 1955.
J. M. Alexander, and J. H. Horton. 5 Apr 56, 41p

Descriptors: (*Savannah river plant, *Fallout), (*Beta sources, *Radiation monitoring), (*Plants, Radiation monitoring), (*Surface waters, Radiation monitoring), Alpha sources, Beta particles, Iodine isotopes, Radioactive wastes, Rain water, Research programs, Surface air, Uranium.

For abstract, see NSA 30 04, number 09547.

DPSP-56-25-54(Del.) PC$5.25/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Atomic Energy Div.
HEALTH PHYSICS REGIONAL MONITORING SEMIANNUAL REPORT, JULY--DECEMBER 1955.
J. H. Horton, and H. G. Mealing. 26 Oct 56, 44p

Descriptors: (*Savannah river plant, *Fallout), (*South carolina, *Radioactivity), (*Beta sources, *Radiation monitoring), (*Alpha sources, Radiation monitoring), Animals, Aquatic ecosystems, Argon 41, Drinking water, Earth atmosphere, Ground water, Iodine 131, Plants, Plutonium 239, Radioactive waste disposal, Radioactive wastes, Radionuclide kinetics, Radionuclide migration, Rain, Strontium 89, Strontium 90, Surface waters, Tritium, Uranium.

For abstract, see NSA 30 04, number 09507.

DPSP-57-25-15 DEL PC$5.00/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Atomic Energy Div.
HEALTH PHYSICS REGIONAL MONITORING SEMIANNUAL REPORT, JULY--DECEMBER 1956.
H. G. Jr. Mealing. 27 Jun 57, 38p

Descriptors: (*Savannah river plant, *Fallout), (*South carolina, *Radioactivity), (*Alpha sources, *Radiation monitoring), (*Beta sources, Radiation monitoring), Animals, Aquatic ecosystems, Drinking water, Earth atmosphere, Ground water, Iodine 131, Plants, Plutonium, Radioactive waste disposal, Radioactive wastes, Radionuclide kinetics, Radionuclide migration, Rain, Surface waters, Tritium, Uranium.

For abstract, see NSA 30 05, number 12683.

DPSP-57-25-4(Del.) PC$5.00/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Atomic Energy Div.
HEALTH PHYSICS REGIONAL MONITORING SEMIANNUAL REPORT, JANUARY--JUNE 1956.
J. H. Horton, and H. G. Jr. Mealing. 26 Feb 57, 38p

Descriptors: (*Savannah river plant, *Fallout), (*South carolina, *Radioactivity), (*Alpha sources, *Radiation monitoring), Animals, Aquatic ecosystems, Beta sources, Drinking water, Earth atmosphere, Ground water, Iodine 131, Plants, Plutonium, Radioactive waste disposal, Radioactive wastes, Radionuclide kinetics, Radionuclide migration, Rain, Strontium 90, Surface waters, Tritium, Uranium.

For abstract, see NSA 30 04, number 09508.

DPSP-57-25-43(Del.) PC$5.25/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Atomic Energy Div.
HEALTH PHYSICS REGIONAL MONITORING SEMIANNUAL REPORT, JANUARY--JUNE 1957.
H. G. Jr. Mealing, and J. H. Horton. 20 Nov 57, 43p

Descriptors: (*Savannah river plant, *Fallout), (*South carolina, *Radioactivity), (*Alpha sources, *Radiation monitoring), (*Beta sources, Radiation monitoring), Animals, Aquatic ecosystems, Drinking water, Earth atmosphere, Fishes, Ground water, Iodine 131, Plants, Plutonium, Radioactive waste disposal, Radioactive wastes, Radionuclide kinetics, Radionuclide migration, Rain, Surface waters, Tritium, Uranium.

For abstract, see NSA 30 04, number 09509.

DPSP-58-25-17(Del.) PC$5.50/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Atomic Energy Div.
HEALTH PHYSICS REGIONAL MONITORING SEMIANNUAL REPORT, JULY--DECEMBER 1957.
H. G. Jr. Mealing, and R. S. Harvey. 15 Jul 58, 50p

Descriptors: (*Savannah river plant, *Fallout), (*South carolina, *Radioactivity), (*Beta sources, *Radiation monitoring), (*Iodine, Radiation monitoring), Alpha sources, Aquatic ecosystems, Drinking water, Earth atmosphere, Ground water, Plants, Plutonium, Radioactive waste disposal, Radioactive wastes, Radionuclide migration, Rain, Surface waters, Tritium, Uranium.

For abstract, see NSA 30 04, number 09510.

DPSP-58-25-38 DEL PC$5.25/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Atomic Energy Div.
HEALTH PHYSICS REGIONAL MONITORING SEMIANNUAL REPORT, JANUARY--JUNE 1958.
R. S. Harvey, J. H. Horton, and H. G. Mealing. 9 Jan 59, 44p

Descriptors: (*Savannah river plant, *Fallout), (*South carolina, *Radioactivity), (*Alpha sources, *Radiation monitoring), (*Beta sources, Radiation monitoring), Animals, Aquatic ecosystems, Drinking water, Earth atmosphere, Ground water, Iodine 131, Milk, Plants, Plutonium, Radioactive waste disposal, Radioactive wastes, Radionuclide kinetics, Radionuclide

migration, Rain, Surface waters, Tritium, Uranium.

For abstract, see NSA 30 05, number 12684.

DPSP-60-25-26(Del.) PC$6.00/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Atomic Energy Div.
HEALTH PHYSICS REGIONAL MONITORING SEMIANNUAL REPORT, JANUARY--JUNE 1960.
Oct 60, 56p

Descriptors: (*Savannah river plant, *Fallout), (*South carolina, *Radioactivity), (*Alpha sources, *Radiation monitoring), (*Beta sources, Radiation monitoring), Animals, Aquatic ecosystems, Cesium 137, Drinking water, Earth atmosphere, Ground water, Iodine 131, Milk, Plants, Plutonium, Radioactive waste disposal, Radioactive wastes, Radionuclide kinetics, Radionuclide migration, Rain, Strontium 90, Surface waters, Tritium, Uranium.

For abstract, see NSA 30 04, number 09511.

DPSP-61-25-4(Del.) PC$6.00/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Atomic Energy Div.
HEALTH PHYSICS REGIONAL MONITORING SEMIANNUAL REPORT, JULY--DECEMBER 1960.
Oct 61, 56p

Descriptors: (*Savannah river plant, *Fallout), (*South carolina, *Radioactivity), (*Alpha sources, *Radiation monitoring), (*Beta sources, Radiation monitoring), Animals, Aquatic ecosystems, Cesium 137, Drinking water, Earth atmosphere, Ground water, Iodine 131, Milk, Plants, Plutonium, Radioactive waste disposal, Radioactive wastes, Radioecological concentration, Radionuclide kinetics, Radionuclide migration, Rain, Strontium 90, Surface waters, Tritium, Uranium.

For abstract, see NSA 30 04, number 09512.

DPSP-62-25-2(Del.) PC$6.50/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Atomic Energy Div.
HEALTH PHYSICS REGIONAL MONITORING SEMIANNUAL REPORT, JANUARY--JUNE 1961.
Feb 62, 68p

Descriptors: (*Savannah river plant, *Radioactive wastes), (*South carolina, *Radioactivity), (*Alpha sources, *Radiation monitoring), (*Beta sources, Radiation monitoring), Animals, Aquatic ecosystems, Cesium 137, Drinking water, Earth atmosphere, Ground water, Iodine 131, Milk, Plants, Plutonium, Radioactive waste disposal, Radionuclide kinetics, Radionuclide migration, Rain, Strontium 90, Surface waters, Tritium, Uranium.

For abstract, see NSA 30 04, number 09513.

DPSP-62-25-9(Del.) PC$6.50/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Atomic Energy Div.
HEALTH PHYSICS REGIONAL MONITORING SEMIANNUAL REPORT, JULY--DECEMBER 1961.
May 62, 67p

Descriptors: (*Savannah river plant, *Fallout), (*South carolina, *Radioactivity), (*Alpha sources, *Radiation monitoring), (*Beta sources, Radiation monitoring), Animals, Aquatic ecosystems, Cesium 137, Drinking water, Earth atmosphere, Fishes, Ground water, Iodine 131, Milk, Plants, Plutonium, Radioactive waste disposal, Radioactive wastes, Radioecological concentration, Radionuclide kinetics, Radionuclide migration, Rain, Strontium 90, Surface waters, Tritium, Uranium.

For abstract, see NSA 30 04, number 09514.

DPSP-63-25-10 DEL PC$4.75/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Atomic Energy Div.
HEALTH PHYSICS ENVIRONMENTAL MONITORING SEMIANNUAL REPORT, JULY--DECEMBER 1962.
Jun 63, 35p

Descriptors: (*Savannah river plant, *Fallout), (*South carolina, *Radioactivity), (*Alpha sources, *Radiation monitoring), (*Beta sources, Radiation monitoring), Animals, Aquatic ecosystems, Cesium 137, Chromium 51, Drinking water, Earth atmosphere, Fishes, Iodine 131, Plants, Radioactive waste disposal, Radioactive wastes, Radionuclide kinetics, Radionuclide migration, Rain, Ruthenium 103, Ruthenium 106, Sediments, Strontium 90, Sulfur 35, Surface waters.

For abstract, see NSA 30 05, number 12685.

DPSP-63-25-3(Del.) PC$5.50/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Atomic Energy Div.
HEALTH PHYSICS ENVIRONMENTAL MONITORING SEMIANNUAL REPORT, JANUARY--JUNE 1962.
Feb 63, 50p

Descriptors: (*Savannah river plant, *Fallout), (*South carolina, *Radioactivity), (*Alpha sources, *Radiation monitoring), (*Beta sources, Radiation monitoring), Animals, Aquatic ecosystems, Cesium 131, Drinking water, Earth atmosphere, Fishes, Ground water, Iodine 131, Milk, Plants, Plutonium, Radioactive waste disposal, Radioactive wastes, Radionuclide kinetics, Radionuclide migration, Rain, Strontium 90, Sulfur 35, Surface waters, Tritium, Uranium.

For abstract, see NSA 30 04, number 09515.

DPSPU-59-11-23 PC$5.50/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Atomic Energy Div.
HEALTH PHYSICS REGIONAL MONITORING SEMIANNUAL REPORT, JULY--DECEMBER 1958.
R. S. Harvey, J. H. Horton, and H. G. Mealing.
Aug 59, 46p

Descriptors: (*Savannah river plant, *Fallout), (*South carolina, *Radioactivity), (*Alpha sources, *Radiation monitoring), (*Beta sources, Radiation monitoring), Animals, Aquatic ecosystems, Drinking water, Earth atmosphere, Ground water, Iodine, Milk, Plants, Plutonium, Radioactive waste disposal, Radioactive wastes, Radionuclide migration, Rain, Surface waters, Tritium, Uranium.

For abstract, see NSA 30 04, number 09516.

DPSPU-59-11-30 PC$5.25/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Atomic Energy Div.
HEALTH PHYSICS REGIONAL MONITORING SEMIANNUAL REPORT, JANUARY--JUNE 1959.
Nov 59, 41p

Descriptors: (*Savannah river plant, *Fallout), (*South carolina, *Radioactivity), (*Alpha sources, *Radiation monitoring), (*Beta sources, Radiation monitoring), Animals, Aquatic ecosystems, Cesium 137, Drinking water, Earth atmosphere, Ground water, Iodine 131, Milk, Plants, Plutonium, Radioactive waste disposal, Radioactive wastes, Radionuclide kinetics, Radionuclide migration, Rain, Strontium 90, Surface waters, Tritium, Uranium.

For abstract, see NSA 30 04, number 09517.

DPSPU-60-11-9 PC$5.25/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Atomic Energy Div.
HEALTH PHYSICS REGIONAL MONITORING SEMIANNUAL REPORT, JULY--DECEMBER 1959.
Jun 60, 44p

Descriptors: (*Savannah river plant, *Fallout), (*South carolina, *Radioactivity), (*Alpha sources, *Radiation monitoring), (*Beta sources, Radiation monitoring), Animals, Aquatic ecosystems, Cesium 137, Drinking water, Earth atmosphere, Ground water, Iodine 131, Milk, Plants, Radioactive waste disposal, Radioactive wastes, Radionuclide kinetics, Radionuclide migration, Rain, Strontium 90, Surface waters, Tritium.

For abstract, see NSA 30 04, number 09518.

DPSPU-64-11-12 PC$5.00/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Atomic Energy Div.
HEALTH PHYSICS REGIONAL MONITORING ANNUAL REPORT, 1963.
Jun 64, 39p

Descriptors: (*Savannah river plant, *Fallout), (*South carolina, *Radioactivity), (*Alpha sources, *Radiation monitoring), Animals, Aquatic ecosystems, Beta sources, Cesium 134, Cesium 137, Drinking water, Earth atmosphere, Ground water, Iodine 131, Milk, Plants, Radioactive waste disposal, Radioactive wastes, Radioecological concentration, Radionuclide kinetics, Radionuclide migration, Strontium 89, Strontium 90, Sulfur 35, Surface waters, Tritium, Uranium, Zinc 65.

For abstract, see NSA 30 04, number 09519.

DPSPU-72-302 PC$4.50/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Savannah River Plant.
ENVIRONMENTAL MONITORING AT THE SAVANNAH RIVER PLANT. ANNUAL REPORT, 1971.
C. Ashley. Sep 72, 29p

Descriptors: (*Savannah river plant, *Fallout), (*South carolina, *Radioactivity), (*Food, *Radiation monitoring), Alpha sources, Animals, Aquatic ecosystems, Beta sources, Cesium 137, Drinking water, Fishes, Plants, Plutonium, Radioactive waste disposal, Radioactive wastes, Radioecological concentration, Radionuclide kinetics, Radionuclide migration, Strontium 89, Strontium 90, Surface waters, Tritium, Uranium, Water pollution.

For abstract, see NSA 30 04, number 09520.

DPSPU-73-302 PC$4.75/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Savannah River Plant.
ENVIRONMENTAL MONITORING AT THE SAVANNAH RIVER PLANT. ANNUAL REPORT, 1972.
C. Ashley, and C. C. Zeigler. Aug 73, 33p

Descriptors: (*Savannah river plant, *Radiation monitoring), (*Cesium 137, Radiation monitoring), (*Strontium 90, Radiation monitoring), (*Tritium, Radiation monitoring), Alpha sources, Beta sources, Cesium 144, Environment, Gamma sources, Gaseous wastes, Ground water, Iodine 131, Liquid wastes, Mercury, Nonradioactive wastes, Plants, Plutonium 238, Plutonium 239, Radioactive waste management, Radioactivity, Savannah river, South carolina, Strontium 89, Surface air, Surface waters, Uranium, Waste disposal.

For abstract, see NSA 30 04, number 09521.

DPSPU-74-30-1 PC$4.75/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Savannah River Plant.
ENVIRONMENTAL MONITORING IN THE VICINITY OF THE SAVANNAH RIVER PLANT. ANNUAL REPORT FOR 1973.
1973, 31p

Descriptors: (*Savannah river plant, *Radiation monitoring), (*South carolina, *Radioactivity), (*Surface air, Radiation monitoring), (*Surface waters, Radiation monitoring), Alpha sources, Beryllium 7, Beta sources, Cerium 141, Cerium 144, Cesium 137, Environment, Fishes, Gamma sources, Gaseous wastes, Human populations, Iodine 131, Liquid wastes, Mercury, Milk, Monitoring, Niobium 95, Pesticides, Plants, Plutonium 238, Plutonium 239, Radiation doses, Radioactive waste management, Rain, Ruthenium 103, Ruthenium 106, Savannah river, Soils, Strontium 89, Strontium 90, Tritium, Zirconium 95.

For abstract, see NSA 30 04, number 09522.

EUR-5118 PC$6.25/MF$2.25
Commission of the European Communities, Ispra (Italy). Joint Nuclear Research Center.
ENVIRONMENTAL RADIOACTIVITY, ISPRA 1972.
M. de Bortoli, and P. Gaglione. Apr 74, 63p
U.S. Sales Only.

Descriptors: (*Ispra-1 reactor, *Fallout), (*Italy, *Radioactivity), (*Earth atmosphere, *Radiation monitoring), (*Atmospheric precipitations, Radiation monitoring), Air pollution, Aquatic ecosystems, Beta sources, Cesium 137, Fishes, Ground water, Milk, Nuclear facilities, Plants, Plutonium 238, Plutonium 239, Radioactive waste disposal, Radioactive wastes, Radioecological concentration, Radionuclide kinetics, Radionuclide migration, Sediments, Strontium 89, Strontium 90, Surface waters, Tritium.

For abstract, see NSA 30 04, number 09523.

IS-3313 PC$5.45/MF$2.25
Ames Lab., Iowa.
SURVEY OF ENVIRONMENTAL RADIOACTIVITY, JANUARY 1–DECEMBER 31, 1973.
M. D. Voss. May 74, 56p
Contract W-7405-eng-82

Descriptors: (*Ames laboratory, *Radiation monitoring), (*Alrr reactor, Radiation monitoring), (*Alpha sources, Radiation monitoring), (*Beta sources, Radiation monitoring), Atmospheric precipitations, Environment, Ground water, Plants, Radioactivity, Sampling, Soils, Surface air, Surface waters.

For abstract, see NSA 30 04, number 09525.

LA-UR-74-764 PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
BIOLOGICAL TRANSFER PROCESSES IN ENVIRONMENTAL SURVEILLANCE.
W. C. Hanson. 7p

Descriptors: (*Nuclear power plants, *Radioactive wastes), (*Ecosystems, *Radionuclide migration), (*Human populations, *Radiation doses), Contamination, Environment, Radiation hazards, Radiation monitoring, Radioecological concentration, Radioisotopes.

For abstract, see NSA 30 04, number 09526.

LA-5579-PR PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
CONTAMINATION LIMITS FOR REAL AND PERSONAL PROPERTY. PROGRESS REPORT, JULY–DECEMBER 1973.
J. W. Healy, and W. J. Smith. Apr 74, 6p
Contract W-7405-eng-36

Descriptors: (*Man, *Radiation hazards), (*Plutonium isotopes, *Maximum permissible level), (*Soils, *Contamination), Americium 241, Calibration, Calibration standards, Radionuclide migration.

For abstract, see NSA 30 04, number 09544.

NIRS-C-1 PC$14.25/MF$2.25
National Inst. of Radiological Sciences, Chiba (Japan).
SURVEY ON FOOD CONSUMPTION FOR INHABITANTS AROUND NUCLEAR SITES IN COASTAL AREA OF IBARAKI PREFECTURE.
Y. Ohmomo. Mar 74, 222p
U.S. Sales Only.

Descriptors: (*Human populations, *Health hazards), (*Nuclear power plants, Health hazards), (*Nuclear facilities, Health hazards), (*Japan, *Food), Coastal waters, Environment, Food chains, Fruits, Gaseous wastes, Ingestion, Liquid wastes, Man, Marine disposal, Nonradioactive wastes, Radiation protection, Radioactive waste disposal, Radioactive waste management, Radioactivity, Radioisotopes, Radionuclide kinetics, Radionuclide migration, Seafood, Seas, Shores, Stack disposal, Vegetables.

For abstract, see NSA 30 05, number 12701.

NP-20037 PC$7.25/MF$2.25
Karlsruhe Univ. (TH) (F.R. Germany). Inst. fuer Physikalische Grundlagen der Reaktortechnik; Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Neutronenphysik und Reaktortechnik.
PRODUCTION AND RELEASE OF RADIOIODINES BY NUCLEAR POWER PLANTS AND REPROCESSING PLANTS AND THE EXPECTED RADIOLOGICAL BURDEN TILL THE YEAR 2000.
F. Porz. Jul 73, 82p
In German. U.S. Sales Only.

Descriptors: (*Iodine 129, *Radiation monitoring), (*Iodine 131, Radiation monitoring), (*Iodine 133, Radiation monitoring), (*Iodine 135, Radiation monitoring), Fuel reprocessing plants, Nuclear power plants, Radioactive wastes.

For abstract, see NSA 30 04, number 09498.

NVO-1253-6 PC$3.00/MF$2.25
Nevada Univ., Reno Desert Research Inst.
HYDROLOGY AND RADIONUCLIDE TRANSPORT MONITORING WELL HT-2M, TATUM DOME, MISSISSIPPI.
P. R. Fenske. Dec 73, 19p
Contract AT(29-2)-1253

Descriptors: (*Radioactive waste disposal, *Underground disposal), (*Ground water, *Radiation monitoring), (*Tritium, Radiation monitoring), Cavities, Liquid wastes, Mississippi, Radionuclide migration, Salmon event, Salt deposits.

For abstract, see NSA 30 05, number 12697.

ORNL-EIS-74-68 PC$12.50/MF$2.25
Oak Ridge National Lab., Tenn.
ENVIRONMENTAL TRANSPORT OF CHEMICALS BIBLIOGRAPHY.
B. K. Wilkinson, L. S. Corrill, and E. D. Copenhaver. May 74, 187p
Contract W-7405-eng-26

Descriptors: (*Environment, *Pollution), (*Radioisotopes, *Diffusion), Bibliographies, Gaseous wastes, Liquid wastes, Pesticides, Radionuclide migration, Solid wastes.

For abstract, see NSA 30 04, number 09527.

ORO-4254-22 PC$4.25/MF$2.25
Oklahoma State Univ., Stillwater Dept. of Chemistry.
NITROGEN CYCLE IN AQUATIC SYSTEMS.
B. P. Cole. 1972, 25p

Descriptors: (*Nitrogen, *Availability), Algae, Ammonia, Aquatic ecosystems, Bacteria, Lakes, Nitrates, Nitrites, Nitrogen compounds, Nitrogen fixation, Sediments, Soils, Water.

For abstract, see NSA 30 04, number 12097.

PB-233 791/3GA PC$3.75/MF$2.25
Missouri Water Resources Research Center, Columbia.
INTERFACIAL INTERACTION OF WATER AND SILICATE MINERALS.
Completion rept. Jul 72-Jul 74,
James M. Phillips, Paul L. Gutshall, and Michael Oglesby. 1 Jul 74, 53p W74-09805, OWRR-A-057-MO(1)
Contract DI-14-31-0001-3825

Descriptors: *Ground water, *Hydrologic cycle, *Silicate minerals, Binding, Clays, Ions, Soil chemistry, Gypsum, Muscovite, Phlogopite, Interfaces, Surface properties.
Identifiers: Selenite, Xanthophyllite, Margarite.

The problems of bonding and migration of water molecules upon sheet structures of mineral samples were investigated. The minerals used in the program have surface structures that are similar and in some cases identical to those found in clays. This study focused upon the molecular level rather than on the bulk property level of capillarity and hydraulics. The interlayer binding energy (IBE) of selenite was measured. There was no significant difference in the IBE of selenite in air and in vacuum. There was a slight difference in the low temperature IBE; however, this was attributable to effects of cold on the mechanism. It was concluded that the IBE is independent of atmospheric and temperature effects within the range of temperature and pressure studied. The IBE of ionic bound lamella of Muscovite, Phlogopite, Margarite, and Xanthophyllite has been calculated. Temperature dependence of water mobilities has been studied in the cleavage chamber and in the Varian-MAT SM1-B high resulution, double focus mass spectrometer. (Modified author abstract)

PB-234 177/4GA PC-GPO/MF$2.25-NTIS
Vanderbilt Univ., Nashville, Tenn. Dept. of Environmental and Water Resources Engineering.
NEGATIVELY BUOYANT JETS IN A CROSS FLOW.
Environmental protection technology series,
Jerry Lee Anderson, Frank L. Parker, and Barry A. Benedict. Oct 73, 225p W74-10200, EPA-660/2-73-012
Grant EPA-R-800613
Paper copy available from GPO, PC$2.50.

Descriptors: *Thermal pollution, *Hydraulic jets, *Fluid flow, *Outfall sewers, Surface waters, Cooling water, Density, Mathematical models, Dilution, Entrainment, Buoyancy, Froude number, Computer programs.

Modification of Fan's and Abrahams jet diffusion models were used to predict the trajectory and dilution of a negatively buoyant jet. Such jets can occur when a chemical waste is discharged into a less dense ambient water or when cool, hypolimnetic water is used for condenser cooling water and discharged into less dense surface waters, then a sinking jet would result. Experimental investigations were conducted involving different combinations of densimetric Froude number, velocity ratio, and initial angle of discharge. Salt was used as the tracer, yielding a fluid that was denser than the ambient receiving water and facilitated measuring concentration profiles of the jet plume. The experimental data was then fitted with predicted jet dilution, trajectory, and cross sectional values for each model.

PB-234 322/6GA PC$5.50/MF$2.25
Minnesota Univ., Minneapolis. Limnological Research Center.
LIMNOLOGY OF LAKE MINNETONKA.
Interim rept. no. 11,
Robert O. Megard. Mar 74, 49p W74-10418, OWRR-A-026-MINN(2)

Descriptors: *Phytoplankton, *Limnology, *Lake Minnetonka, Carbon, Organic compounds, Chlorophylls, Phosphorous inorganic compounds, Water pollution, Sewage, Water chemistry, Nutrients, Minnesota.
Identifiers: Water pollution effects(Plants), Eutrophication.

Fluctuations of population densities of phytoplankton in 4 basins of Lake Minnetonka in Minnesota were inferred from changes of concentrations of chlorophyll a and particulate organic carbon during the ice-fee season. Concentrations of chlorophyll a during 1972 and 1973 were similar to those during 1968 and 1969 except in the lake's largest basin, where concentrations during 1972 and 1973 were only about 50% as high as during 1968 and 1969. The decrease of chlorophyll is attributable to the reduced influx of phosphorus, which decreased from about 13 metric tons/year because sewage effluents were diverted away from the basin during the winter of 1971-1972. The decrease of chlorophyll coincided with lower concentrations of total phosphorus.

PB-234 352/3GA PC$7.25/MF$2.25
Minnesota Univ., St. Paul. Dept. of Agricultural and Applied Economics.
MINNESOTA FLOODS, 1972. COSTS, PROGRAMS AND POLICY IMPLICATIONS.
Natural Resources bulletin,
Alan R. Hopeman, Jr. Jun 73, 81p W74-10417, OWRR-B-054-MINN(2)
Contract DI-14-31-0001-3601

Descriptors: *Floods, *Minnesota, Flood plains, Damage, Policies, Land use, Insurance, Project planning, Government, Legislation, Cost estimates.

The costs of flooding in Minnesota are explored with an eye to determining the incidence of the cost of flooding, i.e., who pays flood costs. The study is predicated on the assertion that the incidence of flood costs has a direct bearing on settlement patterns in flood plain areas. Settlement patterns in turn, have a direct bearing upon the magnitude of flood losses. A major objective is to examine public flood policy in light of the 1972 flood experience in Minnesota, and to suggest ways in which Minnesota's flood plain lands can be put to better use.

PNE-RB-51-7 PC$4.25/MF$2.25
Eberline Instrument Corp., Santa Fe, N.Mex.
RADIOLOGICAL MONITORING PROGRAM, PERIOD COVERING AUGUST 1, 1973 THRU OCTOBER 31, 1973 FOR CER GEONUCLEAR CORPORATION, PROJECT RIO BLANCO.
23p

Descriptors: (*Rio blanco event, *Fallout), (*Colorado, *Radioactivity), (*Plants, *Radionuclide kinetics), (*Fishes, Radionuclide kinetics), Alpha sources, Beta sources, Milk, Radiation monitoring, Radioecological concentration, Radioisotopes, Soils, Strontium 89, Strontium 90, Surface air, Surface waters, Tritium.

For abstract, see NSA 30 04, number 09528.

PNE-RB-51-8 PC$4.00/MF$2.25
Eberline Instrument Corp., Santa Fe, N.Mex.
RADIOLOGICAL MONITORING PROGRAM, PERIOD COVERING NOVEMBER 1, 1973 THRU FEBRUARY 4, 1974 FOR CER GEONUCLEAR CORPORATION, PROJECT RIO BLANCO.
19p

Descriptors: (*Rio blanco event, *Fallout), (*Colorado, *Radioactivity), (*Beta sources, *Radiation monitoring), (*Radioisotopes, Radiation monitoring), Alpha sources, Milk, Plutonium 238, Plutonium 239, Soils, Surface air, Surface waters, Thorium, Tritium, Uranium.

For abstract, see NSA 30 04, number 09529.

SCPRI(RM)-11-1973 PC$4.00/MF$2.25
Service Central de Protection contre les Rayonnements Ionisants, 78 - Le Vesinet (France).
REPORT OF ACTIVITY, NOVEMBER 1973.
1973, 15p
In French. U.S. Sales Only.

Descriptors: (*Environment, *Radiation monitoring), (*France, Radiation monitoring), (*Beryllium 7, Radiation monitoring), (*Zirconium 95, Radiation monitoring), Air, Barium 140, Bibliographies, Cattle, Cesium 137, Drinking water, Dusts, Earth atmosphere, Fishes, Food chains, Ground water, Iodine 131, Lanthanum 140, Manganese 54, Milk, Niobium 95, Plants, Radium 226, Rain, Reactor sites, Rhodium 106, Ruthenium 103, Ruthenium 106, Seawater, Strontium 90, Surface waters, Tables, Tritium, Uranium.

For abstract, see NSA 30 04, number 09539.

SCPRI(RM)-11-1973(Suppl.) PC$4.25/MF$2.25
Service Central de Protection contre les Rayonnements Ionisants, 78 - Le Vesinet (France).
ANNEX TO MONTHLY REPORT, NOVEMBER 1973. DETAIL OF RESULTS OF MEASUREMENT.
1973, 22p
In French. U.S. Sales Only.

Descriptors: (*France, *Radiation monitoring), Air, Barium 140, Beryllium 7, Cattle, Cesium 137, Drinking water, Dusts, Earth atmosphere, Environment, Fishes, Food chains, Ground water, Iodine 131, Lanthanum 140, Manganese 54, Milk, Niobium 95, Plants, Radium 226, Rain, Reactor sites, Rhodium 106, Ruthenium 103, Ruthenium 106, Seawater, Strontium 90, Surface waters, Tables, Tritium, Uranium, Zirconium 95.

For abstract, see NSA 30 04, number 09540.

SCPRI(RM)-12-1973 PC$4.00/MF$2.25
Service Central de Protection contre les Rayonnements Ionisants, 78 - Le Vesinet (France).
REPORT OF ACTIVITY, DECEMBER 1973.
1973, 16p
In French. U.S. Sales Only.

Descriptors: (*Environment, *Radiation monitoring), (*Drinking water, Radiation monitoring), (*Seawater, Radiation monitoring), (*Food chains, Radiation monitoring), Air, Barium 140, Beryllium 7, Bibliographies, Cattle, Cesium 137, Dusts, Earth atmosphere, Fishes, Ground water, Iodine 131, Lanthanum 140, Manganese 54, Milk, Niobium 95, Plants, Radium 226, Rain, Reactor sites, Rhodium 106, Ruthenium 103, Ruthenium 106, Strontium 90, Surface waters, Tables, Tritium, Uptake, Uranium, Zirconium 95.

For abstract, see NSA 30 05, number 12690.

SCPRI(RM)-12-1973(Suppl.) PC$4.50/MF$2.25
Service Central de Protection contre les Rayonnements Ionisants, 78 - Le Vesinet (France).
ANNEX TO MONTHLY REPORT, DECEMBER 1973. DETAIL OF RESULTS OF MEASUREMENT.
1973, 27p
In French. U.S. Sales Only.

Descriptors: (*Environment, *Radiation monitoring), (*Drinking water, Radiation monitoring), (*Seawater, Radiation monitoring), (*Food chains, Radiation monitoring), Air, Barium 140, Beryllium 7, Cattle, Cesium 137, Dusts, Earth atmosphere, Fishes, Ground water, Iodine 131, Lanthanum 140, Manganese 54, Milk, Niobium 95, Plants, Radium 226, Rain, Reactor sites, Rhodium 106, Ruthenium 103, Ruthenium 106, Strontium 90, Surface waters, Tables, Tritium, Uptake, Uranium, Zirconium 95.

For abstract, see NSA 30 05, number 12691.

SFL-A-19 PC$6.00/MF$2.25
Institute of Radiation Physics, Helsinki (Finland).
NATURAL RADIOACTIVITY OF GROUND WATER IN THE HELSINKI AREA.
H. Kahlos, and M. Asikainen. Nov 73, 59p
U.S. Sales Only.

Descriptors: (*Ground water, *Natural radioactivity), (*Finland, Natural radioactivity), (*Radium 226, *Radiation monitoring), (*Radium 228, Radiation monitoring), Gamma spectroscopy, Lead 210, Radiochemical analysis, Radon 222, Uranium.

For abstract, see NSA 30 04, number 09551.

TID-26578 PC$4.25/MF$2.25
General Electric Co., St. Petersburg, Fla. Pinellas Peninsula Plant.
ENVIRONMENTAL MONITORING REPORT, 1973.
1 Apr 74, 25p

Descriptors: (*Nuclear facilities, *Environment), (*Tritium, *Radiation monitoring), (*Krypton 85, Radiation monitoring), Gaseous wastes, Heavy water, Human populations, Nonradioactive wastes, Radiation doses, Radioactive waste management, Radioactivity, Sampling, Surface air, Surface waters, Tritium compounds, Water.

For abstract, see NSA 30 04, number 09530.

UCRL-75250 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
EVALUATION OF THE RESUSPENSION PATHWAY TOWARD PROTECTIVE GUIDELINES FOR SOIL CONTAMINATION WITH RADIOACTIVITY.
L. R. Anspaugh, J. H. Shinn, and D. W. Wilson. 17 May 74, 18p CONF-740529-2, SM-184/13

Descriptors: (*Plutonium 239, *Distribution), (*Soils, *Surface contamination), (*Radioactive aerosols, *Diffusion), (*Human populations, *Dose commitments), Cost benefit analysis, Decontamination, Earth crust, Inhalation, Mathematical models, Radiation hazards, Radioactivity, Radionuclide kinetics, Radionuclide migration.

For abstract, see NSA 30 04, number 09499.

UCRL-75644(Rev.1) PC$4.75/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
ATMOSPHERIC RELEASE ADVISORY CAPABILITY: RESEARCH AND PROGRESS.
J. B. Knox, and T. V. Crawford. 8 May 74, 33p CONF-740406-13

Descriptors: (*Environment, *Radiation monitoring), (*Usa, Radiation monitoring), Earth atmosphere, Human populations, Radiation accidents, Radiation doses, Radioactivity, Reactor accidents, Recommendations.

For abstract, see NSA 30 04, number 09531.

8I. Mining Engineering

COM-74-50698/1GA PC-GPO/MF$2.25-NTIS
National Bureau of Standards, Boulder, Colo. Electromagnetics Div.

ELECTROMAGNETIC NOISE IN ROBENA NO. 4 COAL MINE.
Technical note Jul 72-Dec 73,
W. D Bensena, Motohisa Kanda, and J. W. Adams. Apr 74, 197p NBS-TN-654
Contract H0133005
Paper copy available from GPO $1.50.

Descriptors: *Coal mines, *Electromagnetic noise, Telecommunication, Electromagnetic interference, Spectral energy distribution, Random noise, Normal density functions, Data acquisition, Pennsylvania.
Identifiers: Robena 4 coal mine, *Underground communications.

Two different techniques were used to make measurements of the absolute value of electromagnetic noise in an operating coal mine, Robena No. 4, located near Waynesburg, Pennsylvania. One technique measures noise over the entire electromagnetic spectrum of interest for brief time periods. With present instrumentation, the spectrum can be covered from 40 Hz to 400 kHz. It is recorded using broad-band analog magnetic tape, and the noise data are later transformed to given spectral plots. The other technique records noise envelopes at several discrete frequencies for a sufficient amount of time to provide amplitude probability distributions. The specific measured results are given in a number of spectral plots and amplitude probability distribution plots. The general results are that at frequencies below kHz, power line noise within the mine is severe. Impulsive noise is severe near arcing trolleys, and at lower frequencies near any transmission line. Carrier trolley phone signals and harmonics are strong throughout the mine whenever the trolley phone is in operation.

GJO-100(74) PC$1.30/MF$2.25
USAEC Grand Junction Office, Colo.
STATISTICAL DATA OF THE URANIUM INDUSTRY.
1 Jan 74, 69p

Descriptors: (*Usa, *Uranium deposits), (*Uranium ores, *Ore processing), (*Uranium oxides u3o8, *Production), Economics, Prospecting.

For abstract, see NSA 30 04, number 09479.

LA-UR-74-801 PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
SUBTERRENE ROCK-MELTING EXCAVATION PROGRAM.
R. J. Hanold. 1973, 19p CONF-7309108-1

Descriptors: (*Subterrene penetrators, *Design), Excavation, Melting, Performance testing, Rock drilling, Rocks.

For abstract, see NSA 30 05, number 12638.

PB-232 880/5GA PC$3.75/MF$2.25
Westinghouse Georesearch Lab., Boulder, Colo.
ELECTROMAGNETIC LOCATION EXPERIMENTS IN A DEEP HARDROCK MINE.
Open file rept.,
A. J. Farstad. Sep 73, 61p* BuMines-OFR-28-74
Contract H0242006

Descriptors: *Position finding, *Electromagnetic radiation detection, Rescue systems, Transmitters, Mines(Excavations), Position(Location), Detectors, Safety, Portable equipment, Antennas, Field strength, Magnetic fields, Telecommunication, Idaho.

The report provides the results of experiments in a Northwest Idaho mine using an electromagnetic system for detecting and locating trapped miners. The results show conclusively that lightweight portable transmitters can be effectively used to provide uplink communications and location information in deep hardrock mines. Tests were performed in the Galena Mine using long wire transmitting antennas as well as horizontal and vertical transmitting loops at depths from 3,000 feet to 4,300 feet. Surface measurements were made of magnetic field strengths, with theoretical predictions for a homogeneous ground conductivity consistent with this particular geologic region. Typical metal mines such as Galena use deep vertical shafts for mine access and haulage and these shafts produce signal enhancement at the surface from underground electromagnetic transmitters by as much as 30 dB. Results also show that horizontal wire configuration can serve as an effective alternative to the magnetic dipole antenna in rescue work.

PB-233 540/4GA PC$4.75/MF$2.25
Montana Coll. of Mineral Science and Technology, Butte.
A STUDY OF UNDERGROUND MINE HEAT SOURCES. I. SURVEY OF UNDERGROUND MINE HEAT SOURCES.
Research rept. 1971-73,
James L. Fenton. 30 Jun 73, 144p* BuMines-OFR-19(1)-74
Grant G0122137
Master's thesis.
Paper copy also available from NTIS $12.00/set of 3 reports as PB-233 539-SET.

Descriptors: *Underground mining, *Mine ventillation, Heat stress, Ground water, Oxidation, Blasting, Metabolism, Adiabatic conditions, Compressing, Theses, Rock mechanics, Heat transfer, Equipment, Thermal environments, Industrial medicine.
Identifiers: *Heat sources.

The sources of heat flow into a mine and the various effects that the heat has on mine personnel were investigated. Published information pertaining to these underground heat sources and their effects are compiled, in providing the mining industry with an available, easy-to-use reference to aid in the determination of mine ventilation requirements as mines are in phases of original planning or being extended to depth. Recommendations on important basic research needs are outlined for future consideration by Federal or industrial sponsorship.

PB-233 541/2GA PC$4.75/MF$2.25
Montana Coll. of Mineral Science and Technology, Butte.
A STUDY OF UNDERGROUND MINE HEAT SOURCES. 2. EVALUATING UNDERGROUND HEAT SOURCES IN DEEP MINES.
Research rept. 1971-73,
Walter I. Enderlin. 30 Jun 73, 147p* BuMines-OFR-19(2)-74
Grant G0122137
Paper copy also available from NTIS $12.00/set of 3 reports as PB-233 539-SET.

Descriptors: *Underground mining, *Mine ventillation, Rock mechanics, Ground water, Adiabatic conditions, Compressing, Equipment, Blasting, Metabolism, Cementing, Oxidation, Sulfide minerals, Thermal environments, Drainage, Theses, Industrial medicine.
Identifiers: *Heat sources.

The following heat sources are considered: Wall-rock, ground water, adiabatic compressions, equipment, service lines, blasting, metabolism, curing of cement, and oxidation of sulfides and timber. Mine records were examined, wall-rock temperatures were measured and a survey of the mine ventilating air and mine drainage was performed. Also, the thermal conductivity of wet and dry specimens of the host rock were measured in the laboratory.

PB-233 542/0GA PC$4.00/MF$2.25
Montana Coll. of Mineral Science and Technology, Butte.

A STUDY OF UNDERGROUND MINE HEAT SOURCES. 3. UNDERGROUND MINE AIR-COOLING PRACTICES.
Research rept. 1971-73,
Floyd C. Bossard, and Koehler S. Stout. 30 Jun 73, 81p* BuMines-OFR-19(3)-74
Grant G0122137
Paper copy also available from NTIS $12.00/set of 3 reports as PB-233 539-SET.

Descriptors: *Underground mining, *Air cooling, *Mine ventillation, Mechanical refrigeration, Heat exchangers, Dehumidification, Insulation, Liquid air, Thermoelectric cooling, Dry ice, Ice, Brines, Water cooling.
Identifiers: *Heat sources.

The report covers mine air cooling and dehumidification practices such as mechanical refrigeration; high-pressure, low pressure, reduced-pressure, direct contact, indirect contact heat exchange systems; spot cooling; area-cooling vs. working-place cooling; other air-cooling and heat insulation technique practices; and recommended areas of study such as synthetic liquid air, thermoelectric cooling, dry ice and ice, reducing high-pressure water or brine, air compression-air motor system, and vacuum cooler.

PB-234 511/4GA
Mag Tape $97.50;Foreign $122.50
Bureau of Mines, Amarillo, Tex. Helium Div.
ANALYSES OF NATURAL GASES, JANUARY 1, 1917 TO DECEMBER 31, 1973.
Data file.
31 Dec 73, 1 reel mag tape DOI/DF-74/001
Supersedes PB-221 729 and DOI/DF-73/011.
Specify tape recording mode desired: 7 track, 556 or 800pbi, Bcd, odd or even parity; or 9 track, 800bpi, Ebcdic, odd parity.

Descriptors: *Natural gas, *Chemical composition, *Helium, *Geochemical prospecting, Gas analysis, Magnetic tapes, Reserves.

This tape contains routine analyses and related source data for 8,726 natural gas samples. These samples were collected as a part of a continuous survey of the free world for occurences of helium. This survey has been conducted in the United States by the Bureau of Mines since 1917. In late 1965, the study was expanded to include foreign gas fields. Samples released for publication have been published in a series of USBM bulletins and information circulars. This tape contains all samples released for publication thru December 31, 1973. (It replaces previous tapes in their entirety. There is one record for each sample on the tape plus the sentinel record which is the first record. The tape has a standard IBM label and each record contains 450 characters. The records are blocked one record per block. For further information contact the Helium Division of the Bureau of Mines located in Amarillo, Texas.

PB-234 684/9GA PC$3.00/MF$2.25
Bureau of Mines, Washington, D.C.
THERMAL DEGRADATION OF GREEN RIVER KEROGEN AT 150 TO 350C. COMPOSITION OF PRODUCTS.
Rept. of investigations,
J. J. Cummins, F. G. Doolittle, and W. E. Robinson. Jul 74, 23p BuMines-RI-7924
Prepared by Laramie Energy Research Center, Wyo. See also PB-209 011.

Descriptors: *Oil shale, *Pyrolysis, Chromatographic analysis, Chemical composition, In situ combustion, Materials separation, Alkanes, Aromatic compounds, Shale oil, Ion exchanging, Mass spectra, Gas chromatography, Solvent extraction, Temperature.
Identifiers: *Kerogen.

Green River oil shale previously extracted by benzene was heated at 150C for 0.5 to 360 days to provide information on in situ processing conditions, to determine the effect of low-temperature

heating on the unconverted kerogen, and to determine the composition of benzene-soluble thermal products. The methods used in determining the composition of the soluble thermal products consisted of fractionation of the soluble material, elemental analysis of the soluble products, fractionation of the polar resins by ion-exchange chromatography, gas chromatographic analysis of n-alkanes, and mass spectral analysis of the branched plus cyclic alkanes and aromatic oils. The methods used to determine the effect of low-temperature heating on the unconverted kerogen remaining in the oil-shale heated residues consisted of carbon-hydrogen analysis, volatile material determination, carbon residue determination and oxidation rate determination. (Modified author abstract)

TID-26586 PC$7.25/MF$2.25
General Accounting Office, Washington, D.C.
PROGRESS AND PROBLEMS IN DEVELOPING NUCLEAR AND OTHER EXPERIMENTAL TECHNIQUES FOR RECOVERING NATURAL GAS IN THE ROCKY MOUNTAIN AREA.
1973, 85p

Descriptors: (*Rocky mountains, Natural gas), (*Natural gas, *Recovery), (*Nuclear explosions, Natural gas), (*Chemical explosions, Natural gas), Economics, Environment, Fractures, Hydraulics, Production, Rocks, Safety, Underground explosions, Usa.

For abstract, see NSA 30 05, number 12657.

UCID-15968 PC$10.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
PROJECT RIO BLANCO: PHASE I, TECHNICAL STUDIES.
J. Toman, and H. A. Tewes. 24 Jan 72, 140p
Contract W-7405-eng-48

Descriptors: (*Natural gas, *Production), (*Rio blanco event, *Planning), Research programs.

For abstract, see NSA 30 04, number 09466.

UCID-15999 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
TECHNIQUE OF OBTAINING GAS SAMPLES FROM UNDERGROUND NUCLEAR DETONATIONS.
J. Grens, G. Morris, and D. Skinner. 15 Mar 72, 19p
Contract W-7405-eng-48

Descriptors: (*Natural gas, *Sampling), (*Nuclear explosions, Natural gas), (*Samplers, *Design), Production, Underground explosions.

For abstract, see NSA 30 04, number 09467.

UCRL-51567 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
SUBSURFACE PROBING BY MEASUREMENT OF THE WAVE TILT OF ELECTROMAGNETIC SURFACE WAVES.
J. Lytle, E. Laine, and D. Lager. 15 Apr 74, 32p
Contract W-7405-eng-48

Descriptors: (*Electromagnetic radiation, *Wave propagation), (*Earth crust, *Exploration), Coal, Earth planet, Geophysics, Low temperature, Magnetic dipoles, Measuring methods, Ores, Polar regions, Sand, Surfaces.

For abstract, see NSA 30 04, number 12199.

8J. Physical Oceanography

AD-783 531/7GA PC$4.75/MF$2.25
Texas A and M Univ College Station Dept of Oceanography
OCEAN MICROSTRUCTURES AND THEIR EFFECTS ON SOUND PROPAGATION IN THE CARIBBEAN SEA,
Takashi Ichiye. May 74, 129p Rept no. A/M-Ref-74-3-T
Contract N00014-68-A-0308-002, Grant NSF-GA-26498
Prepared in cooperation with Gulf Universities Research Consortium, Galveston, Tex.

Descriptors: *Underwater sound, *Caribbean Sea, Microstructure, Sound transmission, Salinity, Spectrum analysis, Ocean currents, Profiles, Ocean models.
Identifiers: Cayman Sea, Ocean temperature.

In spring of 1972, 32 STD stations with 14 Nansen casts were occupied in the Cayman Sea and Yucatan Channel. Vertical sections of temperature, salinity and sigma-t along the central axis of the sea were determined. A computer program was developed for correcting digitized salinity-temperature-depth recorder (STD) data for time lag of the temperature sensor against the conductivity sensor and for removing sharp spikes. From temperature, salinity and sigma-t values thus determined every meter at five stations, mean values and the perturbations were obtained to a depth of 1500 m.

AD-783 591/1GA PC$3.00/MF$2.25
Oregon State Univ Corvallis School of Oceanography
EXPOSURE: A NEWSLETTER FOR OCEAN TECHNOLOGISTS. VOLUME 2, NUMBER 3. AIRCRAFT EXPENDABLE BATHYTHERMOGRAPHS USED IN NORPAX EXPERIMENT,
Roderick Mesecar. Jul 74, 14p
Contract N00014-67-A-0369-0007
See also Volume 2, Number 3, AD-780 542.

Descriptors: *Oceanographic equipment, *Bathythermographs, Operation, Calibration, Performance(Engineering), Ocean currents, Flowmeters, Drogue parachutes, Accuracy, Periodicals, Pacific Ocean.
Identifiers: North Pacific experiment, Aircraft expendable bathythermographs.

Contents:
Aircraft expendable bathythermographs used in NORPAX experiment;
A shipboard self-contained profiling system;
Measurement of currents in a coastal upwelling zone with parachute drogues.

AD-783 597/8GA Reprint
Scripps Institution of Oceanography San Diego Calif Marine Physical Lab
PRESSURE DEPENDENCE OF THE ACOUSTIC RELAXATION FREQUENCY ASSOCIATED WITH MGSO4 IN THE OCEAN.
Summary rept.,
H. F. Bezdek. 4 May 72, 7p Rept no. MPL-U-5/73
Contract N00014-69-A-0200-6002
Availability: Pub. in Jnl. of the Acoustical Society of America, v54 n4 p1062-1065 1973.

Descriptors: *Acoustic attenuation, *Underwater sound, Magnesium compounds, Sulfates, Pressure, Pacific Ocean, Sea water.
Identifiers: Magnesium sulfates.

The attenuation of sound waves has been measured at nominal frequencies of 30, 45, 60, 75, 90, and 145 kHz. Analysis of the data indicates that both the relaxation frequency at 50kHZ, which is usually attributed to the presence of MgSO4 in the sea, and the associated compressibility are functions of pressure. As pressure increases, the relaxation frequency shifts upward with a corresponding downward shift in the chemical compressibility. Results are also given for the pressure coefficient of attenuation which permit more precise predictions of acoustic attenuation at frequencies within the range of this experiment. (Modified author abstract)

AD-783 723/0GA PC$4.50/MF$2.25
Coast Guard Washington D C Oceanographic Unit
LIGHT VESSEL/LIGHT STATION OCEANOGRAPHIC OBSERVATIONS, EAST COAST OF THE UNITED STATES, JANUARY-DECEMBER 1972.
Oceanographic rept.,
R. E. Kangas. Feb 74, 125p Rept no. USCG-373-62
See also report dated Jul 73, AD-774 503.

Descriptors: *Oceanographic data, *North Atlantic Ocean, Bathythermograph data, Salinity, Diurnal variations, Coastal regions, Thermoclines, Lighthouses, Boats, United States.

Daily water temperatures and salinities for 1972 from 11 locations along the Atlantic coast are presented and discussed. (Author)

8K. Seismology

COM-74-11416/6GA PC$7.00/MF$2.25
Pennsylvania State Univ., University Park. Coll. of Earth and Mineral Sciences.
EFFECTS OF SOURCE STRUCTURE AND SITE RESPONSE ON GROUND MOTION IN THE NEAR FIELD OF EARTHQUAKES.
Final rept. 1 Apr 72-30 Jun 73,
S. S. Alexander, D. W. McCowan, and Peter Glover. Jun 73, 76p NOAA-74072252
Grant NOAA-N22-125-72(G)

Descriptors: *Earthquakes, *Surface waves, Numerical analysis, Geological faults, Mathematical models, Computer programs, California.
Identifiers: Finite element analysis, *Ground motion, Sna Fernando Earthquake.

For models consisting of a small number of layers of very low velocity sediments overlying high velocity material, computations based on plane waves in layered media predict differences in predominant frequency and duration between vertical and horizontal records, an effect which was widely observed during the San Fernando earthquake. Results show that these differences are pronounced for both body and surface waves. They suggest that, particularly in instances where the geology indicates sharp discontinuities in seismic velocity or density at depth, such calculations may be useful to the engineer concerned with building design. Morever, they have the advantage of being relatively inexpensive in terms of computer time. Subsequent applications of the dynamic finite element code developed in this investigation have proved successful in predicting the main features of the near-field ground motion of the San Fernando earthquake.

8L. Snow, Ice, and Permafrost

AD-783 727/1GA Reprint
Washington Univ Seattle Dept of Atmospheric Sciences
SPECTROPHOTOMETERS FOR THE MEASUREMENT OF LIGHT IN POLAR ICE AND SNOW.
Technical rept.,
R. R. Roulet, G. A. Maykut, and T. C. Grenfell. 30 May 73, 10p Rept no. TR-24
Contract N00014-67-A-0103-0007
Availability: Pub. in Applied Optics, v13 n7 p1652-1659 Jul 74.

Descriptors: *Spectrophotometers, *Polar regions, Light scattering, Ice, Snow, Sea ice, Measurement, Intensity, Solar radiation, Arctic Ocean.

Two portable spectrophotometers have been designed to record light scattering and absorption in polar ice and snow. In the first instrument optical fibers are used to transmit light from the interior of the ice to the spectrophotometer. Such an arrangement allows light measurements up to 2 m away from the instrumentation with minimal disturbance of the natural environment. A miniatu-

rized, submersible spectrophotometer was also built for in situ measurements under floating sea ice.

8M. Soil Mechanics

COM-74-50658/5GA Not available NTIS
National Bureau of Standards, Washington, D.C.
TESTS IN SOILS.
Final rept.,
W. P. Iverson. 1971, 23p
Pub. in Proceedings of Symposium on State-of-the-Art in Corrosion Testing, ASTM Annual Meeting, 21-26 Jun 70, Toronto, Canada: ch21 in Handbook on Corrosion Testing and Evaluation, p575-597 1971.

Descriptors: *Corrosion tests, *Soils, pH, Electrochemistry, Polarization(Charge separation), Oxidation reduction reactions, Soil microbiology.

This reviews and discusses various methods used in measuring the corrosivity of soils and their relative significance. Methods discussed included soil pH, total ductility redox-potential, redox-capacity, resistivity, chemical tests, biological activity, electrochemical tests, and polarization techniques.

COO-1515-54 PC$4.00/MF$2.25
Wisconsin Univ., Madison Dept. of Soil Science.
EOLIAN ADDITIONS TO SOIL.
M. L. Jackson. 1974, 13p

Descriptors: (*Dusts, *Deposition), Aerodynamics, Earth crust, Isotope applications, Isotope ratio, Measuring methods, Meteorology, Oxygen isotopes, Quartz, Sediments, Soils, Variations.

For abstract, see NSA 30 04, number 09561.

PB-234 806/8GA PC$4.25/MF$2.25
Sydney Univ. (Australia). Civil Engineering Labs.
THE TIME SETTLEMENT BEHAVIOUR OF A RIGID DIE RESTING ON A DEEP CLAY LAYER.
Research rept.,
C. Chiarella, and J. R. Booker. Jan 74, 22p R-234

Descriptors: *Clay soils, *Consolidation, Poisson ratio, Foundations, Numerical analysis, Australia, Integral equations.

An important problem in foundation engineering is the determination of the rate of settlement of a raft foundation placed on a deep clay layer. In this paper, the time settlement behavior of a smooth rigid circular die resting on a deep layer of homogeneous clay is investigated. The problem is of the mixed boundary value type and leads to the consideration of a pair of dual integral equations. Numerical results are presented for a range of Poisson's ratios and compared with previous approximate solutions. (Modified author abstract)

PB-234 807/6GA PC$4.00/MF$2.25
Sydney Univ. (Australia). Civil Engineering Labs.
A STUDY OF THE DEFORMATION PARAMETERS OF KAOLIN.
Research rept.,
H. G. Poulos, and A. T. Ahlston. Apr 74, 20p R-243

Descriptors: *Kaolin, *Deformation, Triaxial tests, Consolidation, Modulus of elasticity, Clay soils, Stresses, Shear stress, Australia.

The main object of the paper is to present a comparison between the deformation properties of a kaolin as determined from various triaxial test procedures. The deformation properties studied are the undrained Young's modulus, drained Young's modulus, drained Poisson's ratio and three-dimensional coefficient of consolidation. The effects of the duration of initial consolidation and the duration of undrained strain in a two-stage dead loading test are investigated and finally, data is presented on the dependence of the deformation parameters on the initial stress state and the level of shear stress in the sample, and also on the stress system imposed on the sample during initial consolidation prior to testing. Modified author abstract.

TT-73-56020 PC$3.75/MF$2.25
Department of Agriculture, Washington, D.C.
PEDOLOGIC COVER OF THE WATERSHED OF THE PORECKA RIVER,
D. M. Tanasijevic. 1974, 67p
Trans. of mono. Pedoloski Pokrivac Sliva Porecke Reke, Belgrade, 1970, by Nada Kronja-Stanic. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Soil profiles, *Porecka River, *Yugoslavia, Terrain, Watersheds, Soil classification, Soil properties, Soil chemistry, Climate, Vegetation, Translations.

Contents:
Structure and forms of the relief;
Geological composition;
Climate;
Vegetation;
Hydrography;
Soils of the watershed;
(Brown acid soils, leached brown acid soils, pseudogley, rendzinas, alluvial-diluvial deposits);
Productivity potentials of the soils.

8N. Terrestrial Magnetism

AD-783 693/5GA PC$3.00/MF$2.25
Naval Research Lab Washington D C
GEOLOGIC AND GEOMAGNETIC BACKGROUND NOISE IN TWO AREAS OF THE NORTH ATLANTIC.
Final rept. on Phase 1,
Perry B. Alers, and John M. Bergin. 25 Jul 74, 25p Rept no. NRL-7760

Descriptors: *Geomagnetism, Magnetic anomalies, North Atlantic Ocean, Oceanic crust, Seamounts, Magnetic fields, Interference, Ocean bottom soils, Magnetic disturbances, Magnetic detection, Sediments, Background noise.
Identifiers: *Geomagnetic noise, Paleomagnetism, North Atlantic Quiet Zone.

Surface magnetic fields were measured in two areas of the North Atlantic Quiet Zone in order to characterize the level of magnetic interference arising from geological features in the sea floor. Several of the New England seamounts were found to be isolated in their magnetic effects; the surrounding magnetic environment was not significantly different from that found elsewhere in the Quiet Zone. In another area, a sufficient number of tracks was followed to reveal the presence of low-amplitude magnetic features in which a N-NE trend can be discerned and whose wavelength, 30-40 km, is comparable to that found in more active areas to the east. A filtering technique used on the data enabled us to separate geologic from geomagnetic noise, and the difference between interference encountered on quiet and noisy days is quantitatively described. (Modified author abstract)

AD-783 944/2GA PC$3.25/MF$2.25
Naval Research Lab Washington D C
MAGNETIC VARIATIONS CAUSED BY WIND WAVES.
Interim rept.,
John M. Bergin. Jul 74, 28p Rept no. NRL-MR-2843

Descriptors: *Magnetic disturbances, *Geomagnetism, *Ocean waves, Magnetic fields, Magnetometry, Wind, Stochastic processes, Deep oceans, Air water interactions, Wind direction, Gaussian noise.

Due to the high sensitivity of the newer magnetometers, magnetic variations induced by sea waves have become important. Statistical properties of the magnetic variations induced by an arbitrary directional spectrum of wind waves are investigated. Detailed numerical results for the case of the fully developed Neumann directional spectrum are presented in order to convey some idea of the magnitude and nature of magnetic variations in different geographic locations under various wind conditions.

LNF-73-55 PC$4.00/MF$2.25
Comitato Nazionale per l'Energia Nucleare, Frascati (Italy). Laboratori Nazionali di Frascati.
RADIOFREQUENCY SUPERCONDUCTOR MAGNETOMETER.
E. P. Balsamo, G. Paterno, G. Lucano, S. Pace, and G. L. Romani. 2 Nov 73, 12p
In Italian. U.S. Sales Only.

Descriptors: (*Magnetometers, *Superconductors), Operation, Performance, Uses.

For abstract, see NSA 30 04, number 11319.

9. ELECTRONICS AND ELECTRICAL ENGINEERING

9A. Components

AD-783 556/4GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
MANUAL ON PLANT POWER ENGINEERING MEDIUM-PRESSURE OIL-FILLED CABLES FOR 220 KV VOLTAGE.
1 Jul 74, 9p Rept no. FTD-HT-23-2245-74
Edited trans. of Promyshlennaya Energetika (USSR) n4 p61-62 Apr 73, by Francis T. Russell.

Descriptors: *Electric cables, Oils, Fillers, Installation, Translations, USSR.
Identifiers: Design.

Describes the construction and laying of oil-filled cables in the USSR.

AD-783 703/2GA PC$5.50/MF$2.25
Westinghouse Defense and Electronic Systems Center Baltimore Md Systems Development Div
STUDY OF THE USE OF CHARGE-COUPLED DEVICES (CCD'S) IN ANALOG SIGNAL PROCESSING SYSTEMS.
Final rept. 15 Sep 73-15 Mar 74,
Marvin H. White, and William R. Webb. May 74, 186p* Rept no. 74-0462
Contract N00014-74-C-0069

Descriptors: *Charge coupled devices, *Signal processing, Analog systems, Electric filters, Radar, Sonar, Communication and radio systems, Correlators.

The first section of the report describes charge-coupled device (CCD) characteristics such as signal input and output, tap weighting, frequency response, dispersion, dynamic range, linearity, clocking, etc. This is followed by a discussion of basic CCD building blocks (i.e., series in/series out (SI/SO), series in/parallel out (SI/PO), and parallel in/series out (PI/SO)) for discrete analog signal processing (DASP) in which discrete analog samples are transported with an electrically alterable time delay and analog weighted. DASP is contrasted with conventional digital signal processing (DSP) in the remainder of the report and illustrations are presented from representative systems, such as radar, sonar, and communications, to indicate the dramatic savings in cost, weight and volume, and power. A section of the report is devoted to transversal filters and the effects of tap weights and tap weight errors on filter response. (Modified author abstract)

AD-783 836/0GA PC$4.75/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
APPLICATION OF POLYMER SEMICONDUCTORS IN ELECTRONICS AND AUTOMATION,
Ya. M. Paushkin. 6 May 74, 32p Rept no. FSTC-HT-23-1969-73
Trans. of mono. Organicheskie Polimerye Poluprovodniki, Moscow, 1971 p211-223, by John Eros and James McVay.

Descriptors: *Polymers, *Semiconductor devices, *Thermistors, Electrical conductivity, Temperature, Strain gages, Automation, USSR, Translations.
Identifiers: *Organic semiconductors.

The report describes characteristics and applications of polymer semiconductors in industry and electronics. Their response and use as thermally controlled resistors are discussed, as well as volt-ampere characteristics and strain gage applications.

AD-783 870/9GA PC$3.25/MF$2.25
Princeton Univ N J Device Physics Lab
STUDY OF ELECTRONIC TRANSPORT AND BREAKDOWN IN THIN INSULATING FILMS.
Semi-annual technical rept. no. 3,
Walter C. Johnson, Murray A. Lampert, and Wilmer R. Bottoms. Jan 74, 26p Rept no. PU-DPL-TR-28 AFCRL-TR-74-0229
Contract F19628-72-C-0298, ARPA Order-2180
See also report dated Jul 73, AD-777 817.

Descriptors: *Integrated circuits, *Dielectric films, *Electron transport, Silicon dioxide, Silicon nitrides, Silicon, Ion implantation, Electron irradiation.
Identifiers: *Dielectric breakdown, Aluminum oxide, Hot electrons, Metal insulator semiconductors, Scanning electron microscopy.

This report reviews progress in a comprehensive research program directed toward a basic understanding of electronic transport, charge trapping, and dielectric breakdown in the thin insulating films used in integrated circuits. Research is reported in the following areas: Corona-induced nondestructive breakdown in insulating films; Self-quenched breakdown of insulating films; Charge-discharge studies of charge-carrier trapping in insulating films; Charge injection by electron beam; Scanning electron microscope studies; Study of lateral nonuniformities in metal-insulator-semiconductor structures; Monte-Carlo calculations of hot-electron distributions; and Theoretical modeling of local breakdown.

AD-783 900/4GA PC$4.00/MF$2.25
Michigan Univ Ann Arbor Electron Physics Lab
MICROWAVE SOLID-STATE DEVICE AND CIRCUIT STUDIES.
Interim rept. 1 Sep 73-1 Mar 74,
G. I. Haddad. Jun 74, 91p Rept no. 012128-1/2 RADC-TR-74-155
Contract F30602-74-C-0012

Descriptors: *Solid state electronics, *Microwave equipment, *Gunn diodes, *Avalanche diodes, *Field effect transistors, Trapatt devices, Impatt diodes, Fabrication, Modulation, Doping, Gallium arsenides, Silicon, Integrated circuits.

The research is concerned with the investigation and utilization of various phenomena and techniques for the generation, amplification, detection and control of electromagnetic energy at microwave frequencies. The work is mainly oriented toward an investigation of the basic properties, capabilities and potential of: Avalanche transit-time devices including IMPATTs and TRAPATTs; Transferred-electron devices; Microwave field-effect transistors; Microwave integrated circuits.

AD-783 903/8GA PC$5.00/MF$2.25
State Univ of New York Buffalo
PULSED VACUUM ARCS.
Final rept. Jun 72-Jun 73,
David L. Lockwood. Jun 74, 153p RADC-TR-74-133
Contract F30602-72-C-0415

Descriptors: *Vacuum switches, Electric arcs, Plasmas(Physics), Pulses, Plasma generators.

Pulsed vacuum arcs are examined from the view of device engineering. Cathode spot behavior which is well documented in the literature is discussed with particular attention to emission rates and stability. The metallic plasma characteristics are found to be such that the current is drift dominated over most of the arc. This leads to a particularly simple relationship between the arc current and externally applied magnetic fields. Using this theory, which is referred to in the literature as magneto-ionic theory, circuits involving the vacuum arc are analyzed. Agreement with experimental data is found to be good, with the major discrepancies occurring at high magnetic fields. A high voltage pulsed vacuum arc switch was developed which was operated at voltages up to 25 kV and currents of 800 A. The current rise time for this switch was compared with a theoretical expression based on a fixed arc spot division time, and the results were found to be in good agreement. Other applications of the pulsed vacuum arc are also discussed. These are electric propulsion, metal spraying, and vacuum pumping. (Author)

AD-783 917/8GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
CAUSES FOR THE OCCURRENCE OF PULSED INTERFERENCE IN REMOTE-CONTROL CONNECTION CIRCUITS,
K. K. Abramov, and V. S. Fedenko. 19 Jul 74, 11p Rept no. FTD-HT-23-1706-74
Edited trans. of mono. Ustroistva i Elementii Promyshlennoi Telemekhaniki, n.p., 1964 p50-54, by Catherine M. Barber.

Descriptors: *Transmission lines, Interference, Pulses, Remote control, Mathematical analysis, Translations, USSR.

The article examines the conditions of the occurrence of pulsed interference in short sections of connecting lines.

COM-74-11374/7GA PC$5.75/MF$2.25
National Bureau of Standards, Boulder, Colo. Cryogenics Div.
CHARACTERIZATION OF A SUPERCONDUCTING COIL COMPOSITE.
Interim rept.,
C. W. Fowlkes, P. E. Angerhofer, R. N. Newton, and A. F. Clark. Dec 73, 52p NBSIR-73-349

Descriptors: *Magnet coils, *Composite materials, *Superconductors, *Superconducting magnets, Thermal expansion, Poisson ratio, Modulus of elasticity, Epoxy resins, Niobium alloys, Titanium alloys, Copper, Stresses, Shear stress, Mathematical models, Cryogenics.
Identifiers: Fiberglass reinforced plastics.

The superconducting coil composite material being used by the Annapolis Laboratory of the Naval Ship Research and Development Center is characterized by its mechanical and thermal properties. The Young's moduli, Poisson's ratios, and thermal contractions are measured from room temperature to 4K and reported in this interim report. A micro-mechanical analysis based upon volume fractions of constituents is used to predict room-termperature properties, and a comparison is made to the measured values.

LA-5581-PR PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
USAEC-DAT DC SUPERCONDUCTING POWER TRANSMISSION LINE PROJECT AT LASL. PROGRESS REPORT, OCTOBER 1--DECEMBER 31, 1973.
W. E. Keller, and R. D. Taylor. Apr 74, 18p
Contract W-7405-eng-36

Descriptors: (*Power transmission, Superconducting cables), (*Superconducting cables, *Performance testing), Direct current, Intermetallic compounds, Niobium alloys, Tin alloys.

For abstract, see NSA 30 05, number 14738.

PATENT-3 732 846 Not available NTIS
Department of the Army Washington D C
CRYSTAL PLATING MONITORING SYSTEM.
Patent,
Theodore J. Lukaszek. Filed 7 Jan 72, patented 15 May 73, 5p Rept nos. PAT-APPL-216 032,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Plating, *Patents, *Crystal oscillators, *Quartz resonators, Fabrication, Quality control.
Identifiers: PAT-CL-118-8.

The patent relates to crystals, and particularly to plating techniques for improving the quality of crystals. More particularly, this disclosure relates to the production of crystals having a minimum of unwanted, or inharmonic, modes of oscillation. This disclosure describes an apparatus and a method for taking a mode spectrograph to determine the impedance characteristic of a crystal in the frequency range of a desired harmonic while the crystal is in the process of being plated in a vacuum.

PATENT-3 733 447 Not available NTIS
Department of the Army Washington D C
TILT RESPONSIVE INERTIA SWITCH WITH PRINTED CIRCUIT AND MOVABLE BALL CONTACT.
Patent,
Clayton J. Schneider, Jr. Filed 2 Dec 71, patented 15 May 73, 6p Rept nos. PAT-APPL-204 105,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Electric switches, *Patents, Printed circuits, Inertia, Tilt, Spheres, Warning systems, Electric contacts.
Identifiers: PAT-CL-200-61-52.

The patent relates to a printed circuit, intermittent, normally open, single pole electric switch designed to become operative upon the receipt of a tilt motion.

PATENT-3 775 842 Not available NTIS
Atomic Energy Commission, Washington, D.C.
METHOD FOR CENTERING AND RESTRAINING COILS IN AN ELECTROMAGNET.
Patent,
Robert Sheldon, and Bruce P. Strauss. Filed 16 Aug 72, patented 4 Dec 73, 7p PAT-APPL-281 264
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Electromagnets, *Magnet coils, *Patents, Positioning, Retaining, Tubes.
Identifiers: PAT-CL-29-606.

The patent relates to a body centered and restrained within a housing by surrounding the body with a plurality of flattened like tubes positioned between the body and the interior walls of the housing. The flattened like tubes are simultaneously expanded so as to center the body by filling the tubes with a hardenable material under pressure. The hardenable material is subsequently hardened thereby restraining movement of the body from the centered position.

SLA-74-5243 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
DESIGN REQUIREMENTS FOR RADIATION HARDENED SEMICONDUCTOR DEVICES.
B. L. Gregory, and C. W. Gwyn. 2p CONF-740612-3

Descriptors: (*Semiconductor devices, *Radiation hardening), Design.

For abstract, see NSA 30 04, number 09651.

SLL-74-5223 PC$4.00/MF$2.25
Sandia Labs., Livermore, Calif.
ELECTRICAL EQUIVALENCE OF TWO DIFFERENT RADIATION-INSENSITIVE CABLE DESIGNS.
K. D. Marx, and E. O. Williams. Mar 74, 13p CONF-740707-7
Contract AT(29-1)-789

Descriptors: (*Coaxial cables, *Radiosensitivity), Equivalent circuits, Physical radiation effects, Radiation hardening.

For abstract, see NSA 30 04, number 09652.

9B. Computers

AAEC/E-265 PC$6.25/MF$2.25
Australian Atomic Energy Commission Research Establishment, Lucas Heights.
AAEC IMPLEMENTATION OF AND MODIFICATIONS TO RELEASE 21.6 OF THE IBM360 OPERATING SYSTEM.
I. J. Hayes. Feb 74, 64p
U.S. Sales Only.

Descriptors: (*Ibm computers, *Operation), Management, Programming, Variations.

For abstract, see NSA 30 04, number 12070.

AD-783 530/9GA PC$4.50/MF$2.25
Naval Weapons Lab Dahlgren Va
DIGITAL SCENE AND IMAGE GENERATION.
Technical rept.,
Marshall B. Faintich. Jul 74, 112p Rept no. NWL-TR-3147

Descriptors: *Image processing, *Computer programs, Digital systems, Pattern recognition, Terrain intelligence, Aerial photography, Scientific satellites.
Identifiers: Scene analysis, Remote sensing.

The report presents both the mathematical development and computer software for the digital image generation of topographic scenes as well as any three-dimensional object as viewed from any observation point. Applications of the scene generation software are discussed in light of tactical military operations. The image generation programs are applied to several satellite research studies. (Author)

AD-783 537/4GA PC$12.25/MF$2.25
Defense Intelligence Agency Washington D C
MACHINE INDEPENDENT DATA MANAGEMENT SYSTEM (MIDMS) JOB CONTROL LANGUAGE PROCEDURES AND INSTALLATION GUIDE.
User Documentation.
1 Aug 74, 185p Rept no. DIAM-65-9-11-Rev
Supersedes report dated 10 Aug 73, AD-766 824.

Descriptors: *Computer programming, *Data management, Data processing, Compilers, Mathematical logic, Memory devices, Instruction manuals.
Identifiers: *MIDMS(Machine Independent Data Management System), Machine independent data management system, Honeywell G-635/6000 computers, IBM 360 computers, File structures, Job control languages(Computers).

The document describes in detail the job control language procedures provided for users of the Machine Independent Data Management System (MIDMS). The procedures were written to facilitate the use of MIDMS on both the IBM 360 and the Honeywell G-635/6000 series computers. Procedure code listings and job control language alternatives are also provided in the document. In addition, the document describes the detailed installation instructions required for loading a system tape. (Modified author abstract)

AD-783 545/7GA PC$3.00/MF$2.25
California Univ Los Angeles Graduate School of Management
SYSTEM EVALUATION TECHNIQUES FOR ERROR DETECTION.
Technical rept.,
B. P. Lientz. 1 Aug 74, 18p Rept no. TR-6
Contract N00014-69-A-0200-4053

Descriptors: *Data processing security, Data processing terminals, Minicomputers, Errors, Statistical analysis.
Identifiers: *Computer networks.

A major problem in the analysis of data communication networks has been that of error detection and measurement in an on-line environment. In a store and forward message switching setting the problem is to evaluate batches of messages for errors in order to do retransmission. This problem was motivated by a problem in a process control setting. Technically this can be viewed in terms of a random variable denoting error with an unknown set of parameters. A new approach is developed for sequential determining tolerance intervals. These are contrasted to classical and compound decision process methods.

AD-783 613/3GA PC$4.50/MF$2.25
Inco Inc Mclean Va
TOSS EXCHANGE CENTER.
Technical rept. Jul-Dec 73,
R. Taylor, D. Lewis, R. Hicks, B. Montcalm, and C. Shorter. Jun 74, 122p RADC-TR-74-162
Contract F30602-73-C-0347

Descriptors: *Communications networks, *Minicomputers, *Military intelligence, Data processing, Information processing, Interfaces, Cryptography, Routing, Queueing theory.
Identifiers: TOSS(Terminal Oriented Support System), Terminal oriented support system.

The interim technical report documents the detailed system specifications for the Terminal Oriented Support System (TOSS) Exchange Center (TEC) as required under RADC Contract. TEC is a software system design which enables a mini-computer to function as a network communications controller providing facilities to handle the transfer of data among intelligence centers.

AD-783 626/5GA PC$3.25/MF$2.25
Massachusetts Inst of Tech Cambridge
THE CAMBRIDGE PROJECT: COMPUTER METHODS FOR ANALYSIS AND MODELING OF COMPLEX SYSTEMS.
Interim rept. Jul-Dec 73,
D. B. Yntema. Feb 74, 36p RADC-TR-74-159
Contract F30602-72-C-0001, ARPA Order-1756
See also AD-754 978.

Descriptors: *Computer applications, *Computer programming, Time sharing, Statistical analysis, Reviews.
Identifiers: Multics system, Honeywell 6180 computers, Cambridge project.

The Cambridge Project is a cooperative effort by a number of scientists at M.I.T. and Harvard; its purpose is to make the digital computer more useful and usable by scientists in the basic and applied behavioral sciences, and in other sciences that have similar computing problems. The most notable single achievement of the half year covered in this report was the transfer of the entire Consistent System from the old Multics computer, which was a Honeywell 645, to a new Multics computer, a Honeywell 6180, and the subsequent transfer to another 6180 operated by the Air Force Data Services Center. (Modified author abstract)

AD-783 653/9GA PC$3.25/MF$2.25
Signals Research and Development Establishment Christchurch (England)
SOFTWARE REQUIREMENTS FOR DEDICATED HIGH INTEGRITY SYSTEMS.
J. M. Taylor. Mar 74, 35p Rept no. SRDE-73010
DRIC-BR-41597
Presented to the Inter-Establishment Committee for Computer Applications (IECCA) 5 Feb 74.

Descriptors: *Computer programming, Compilers, Real time, Multiprocessors, Experimental design, Great Britain.
Identifiers: HIVE system, Multiprogramming, Switching theory.

The main body of the paper gives a general account of a virtual machine approach to specifying and designing the software for large, dedicated high integrity systems. This is intended primarily as an introduction to Annex A of the paper which gives an example of how this approach can be embodied in a software User Requirement suitable for procuring systems at the current state-of-the-art. The approach described is based on specifying the interface between applications software and systems software in terms of a standard, high level virtual machine which provides all the facilities required or implied by the applications source code at all stages of compilation, system building and run-time execution. This approach has been derived from research at SRDE on the design, implementation and evaluation of a particular virtual machine of this type, the HIVE system.

AD-783 682/8GA PC$3.25/MF$2.25
Washington Univ Seattle Lab for Chemometrics
INTERACTIVE PATTERN RECOGNITION IN THE CHEMICAL LABORATORY.
Technical rept. no. 3, Apr-Aug 74,
James R. Koskinen, and Bruce R. Kowalski. Aug 74, 26p
Contract N00014-67-A-0103-0036, Grant NSF-GP-42013

Descriptors: *Pattern recognition, *Chemistry, *Interactive graphics, Display systems, Molecular structure, Chemical reactions, Interfaces.

An interactive pattern recognition system has been developed to facilitate the use of pattern recognition in the chemical laboratory. This system has been designed to be user oriented and runs on a time-sharing computer and communicates with the chemist via an intelligent computer graphics terminal. By using a menu on the display screen, the chemist can select the preprocessing to be done, the supervised learning method to be used, the clustering method to be used, or the type of display to be presented. (Modified author abstract)

AD-783 707/3GA PC$3.00/MF$2.25
Washington Univ Seattle Lab for Chemometrics
SELECT: AN ORTHOGONAL FEATURE-SELECTION METHOD.
Technical interim rept. no. 2, Apr-Aug 74,
B. R. Kowalski, and C. F. Bender. Aug 74, 19p
Contract N00014-67-A-0103-0036

Descriptors: *Spectrum analysis, *Pattern recognition, *Mass spectroscopy, Learning machines, Classification, Algorithms.
Identifiers: Feature selection.

A new preprocessing method that has found considerable use for chemical applications is presented. Features are selected that are useful for class discrimination, orthogonal, and at least in part, retain identity to the original measurements. A brief introduction to chemical pattern recogni-

tion is presented followed by a description of the method and an application to mass spectral data analysis. (Author)

AD-783 728/9GA Reprint
Massachusetts Inst of Tech Cambridge Project Mac
PROTECTION AND THE CONTROL OF INFORMATION SHARING IN MULTICS,
Jerome H. Saltzer. 1974, 16p
Contract N00014-70-A-0362-0006
Sponsored in part by Advanced Research Projects Agency, Arlington, Va.
Availability: Pub. in Communications of the ACM, v17 n7 p388-402 Jul 74.

Descriptors: *Data processing security, *Time sharing, Access, Memory devices.
Identifiers: *Multics system, Computer information security, MAC project.

The design of mechanisms to control the sharing of information in the Multics system is described. Five design principles help provide insight into the tradeoffs among different possible designs. The key mechanisms described include access control lists, hierarchical control of access specifications, identification and authentication of users, and primary memory protection. The paper ends with a discussion of several known weaknesses in the current protection mechanism design. (Author)

AD-783 766/9GA PC$4.50/MF$2.25
Electronic Systems Div L G Hanscom Field Mass
SUPPORT OF AIR FORCE AUTOMATIC DATA PROCESSING REQUIREMENTS THROUGH THE 1980'S (SADPR-85). VOLUME I. SADPR-85 REPORT, INCLUDING EXECUTIVE SUMMARY.
Rept. for Sep 73-Jul 74,
Robert W. O'Keefe. Jun 74, 108p* Rept no. ESD-TR-74-192-Vol-1
See also Volume 2, AD-783 767.

Descriptors: *Data processing, *Logistics support, *Information processing, Air Force, Communications networks, Cost analysis, Systems analysis, Computer programming, Requirements, Management planning and control, Minicomputers, Multiprocessors, Manpower.
Identifiers: Computer networks, *Technology forecasting.

The report (SADPR-85) identifies the total automatic data processing (ADP) requirements of base level organizations (i.e., USAF operational and support organizations below the major command headquarters level) through the 1980's; provides feasible automatic data processing system (ADPS) concepts and alternative system configurations for satisfying those requirements; and suggests an implementation plan for the options chosen. (Author)

AD-783 767/7GA PC$5.00/MF$2.25
Electronic Systems Div L G Hanscom Field Mass
SUPPORT OF AIR FORCE AUTOMATIC DATA PROCESSING REQUIREMENTS THROUGH THE 1980'S (SADPR-85). VOLUME II. BACKGROUND AND REQUIREMENTS.
Rept. for Sep 73-Jul 74,
Robert W. O'Keefe. Jun 74, 163p* Rept no. ESD-TR-74-192-Vol-2
See also Volume 1, AD-783 766 and Volume 3, AD-783 768.

Descriptors: *Data processing, *Logistics support, *Information processing, Air Force, Communications networks, Cost analysis, Systems analysis, Computer programming, Requirements, Management planning and control, Minicomputers, Multiprocessors, Manpower.
Identifiers: Computer networks, *Technology forecasting.

The report contains appendices 1-5 of the Air Force data processing requirements study which include: Study conduct; Environment; Mobility; ADP workloads; Manual information handling.

AD-783 768/5GA PC$7.25/MF$2.25
Electronic Systems Div L G Hanscom Field Mass
SUPPORT OF AIR FORCE AUTOMATIC DATA PROCESSING REQUIREMENTS THROUGH THE 1980'S (SADPR-85). VOLUME III. TECHNOLOGY. APPENDIX VI, INCLUDING ANNEX A.
Rept. for Sep 73-Jul 74,
Robert W. O'Keefe. Jun 74, 312p* Rept no. ESD-TR-74-192-Vol-3
See also Volume 2, AD-783 767 and Volume 4, AD-783 769.

Descriptors: *Data processing, *Logistics support, *Information processing, Air Force, Communications networks, Cost analysis, Systems analysis, Computer programming, Requirements, Management planning and control, Minicomputers, Multiprocessors, Manpower.
Identifiers: Computer networks, *Technology forecasting.

Since the SADPR-85 Data Project Directive called for planning a system for implementation in the late 1970s and early 1980s, an understanding was needed of the data processing and communications capabilities and costs likely to be available at that time. Previous technology forecasts generally dealt with components and the state-of-the-art in research and development. The appendix summarizes and integrates the major findings of these technology forecasts and provides the basis for the system configuration descriptions which are contained in Appendix IX.

AD-783 769/3GA PC$6.50/MF$2.25
Electronic Systems Div L G Hanscom Field Mass
SUPPORT OF AIR FORCE AUTOMATIC DATA PROCESSING REQUIREMENTS THROUGH THE 1980'S (SADPR-85). VOLUME IV. CONCEPT AND CONFIGURATIONS.
Rept. for Sep 73-Jul 74,
Robert W. O'Keefe. Jun 74, 253p* Rept no. ESD-TR-74-192-Vol-4
See also Volume 3, AD-783 768 and Volume 5, AD-783 770.

Descriptors: *Data processing, *Logistics support, *Information processing, Air Force, Communications networks, Cost analysis, Systems analysis, Computer programming, Requirements, Management planning and control, Minicomputers, Multiprocessors, Manpower.
Identifiers: Computer networks, *Technology forecasting.

The report contains appendices 7-9 of the Air Force data processing requirements study which include: Criteria; Concept of operations; Alternative configurations.

AD-783 770/1GA PC$6.75/MF$2.25
Electronic Systems Div L G Hanscom Field Mass
SUPPORT OF AIR FORCE AUTOMATIC DATA PROCESSING REQUIREMENTS THROUGH THE 1980'S (SADPR-85). VOLUME V. ECONOMIC ANALYSIS.
Rept. for Sep 73-Jul 74,
Robert W. O'Keefe. Jun 74, 297p* Rept no. ESD-TR-74-192-Vol-5
See also Volume 4, AD-783 769 and Volume 6, AD-783 771.

Descriptors: *Data processing, *Logistics support, *Information processing, Air Force, Communications networks, Cost analysis, Systems analysis, Computer programming, Requirements, Management planning and control, Minicomputers, Multiprocessors, Manpower.
Identifiers: Computer networks, *Technology forecasting, Economic analysis.

The report contains the economic analysis appendices of the Air Force data processing requirements study which include: Cost structure; Cost model; Baseline and augmented baseline; Configuration costs; Benefits.

AD-783 771/9GA PC$4.50/MF$2.25
Electronic Systems Div L G Hanscom Field Mass
SUPPORT OF AIR FORCE AUTOMATIC DATA PROCESSING REQUIREMENTS THROUGH THE 1980'S (SADPR-85). VOLUME VI. PROGRAM PLANNING.
Rept. for Sep 73-Jul 74,
Robert W. O'Keefe. Jun 74, 113p* Rept no. ESD-TR-74-192-Vol-6
See also Volume 5, AD-783 770.

Descriptors: *Data processing, *Logistics support, *Information processing, Air Force, Communications networks, Cost analysis, Systems analysis, Computer programming, Requirements, Management planning and control, Minicomputers, Multiprocessors, Manpower.
Identifiers: Computer networks, *Technology forecasting.

The document describes a program management scheme in terms of key elements of a technical development and implementation process.

AD-783 781/8GA PC$5.00/MF$2.25
Naval Postgraduate School Monterey Calif
COMPUTER DATA SECURITY.
Master's thesis,
Dale Leslie Larson. Jun 74, 39p

Descriptors: *Data processing security, Memory devices, Access, Cryptography, Computer programming, Time sharing, Auditing, Surveillance, Theses.
Identifiers: *Computer information security, Multiprogramming, Multiprocessing, *Computer privacy.

The thesis presents a wide spectrum of computer data security, including both practical and theoretical aspects of the subject. It was motivated by the concern for the general lack of adequate knowledge, techniques, implementation, and application of computer data security. The objective was to (1) review the pertinent features of data security and the relationship of these features to the computer and its users; (2) generate an awareness of the techniques and problems in data security by presenting the main issues; and (3) discuss theoretical as well as specific applications of techniques and methodology for data base security and data access control. (Modified author abstract)

AD-783 789/1GA PC$13.75/MF$2.25
Naval Postgraduate School Monterey Calif
ALL APPLICATION DIGITAL COMPUTER OPERATING SYSTEM DESIGN AND SPECIFICATION.
Master's thesis,
Bernard Janov, and Vernon Michael Johns. Jun 74, 215p

Descriptors: *Digital computers, *Computer programs, Compilers, Control sequences, Boolean algebra, Multiprocessors, Allocations, Interfaces, Theses.
Identifiers: *Operating systems(Computers), Design, Structured programming, Paging, All application digital computers.

The paper discusses the design and specification of a general purpose operating system for the proposed All Application Digital Computer. The objective is to develop a system which is relatively hardware independent, adaptable, comprehensive, maintainable and functional in a multiprocessing, multiprogramming environment. The operating system model is defined by using the techniques of Structured Programming, Decision Hiding, and Multi-Level Hierarchical Ordering. An initial set of functional requirements and system constraints are postulated from which additional functions are defined and assigned to modules for further specification. (Modified author abstract)

AD-783 871/7GA PC$4.75/MF$2.25
Washington Univ St Louis Mo Computer Systems Lab
MACROMODULAR COMPUTER DESIGN. PART 1. DEVELOPMENT OF MACROMODULES. VOLUME I. OVERVIEW OF MACROMODULES.
Final rept. 1 Apr 65-1 Dec 73,
Christine D. Coaker. Feb 74, 144p* Rept no. TR-44
Contract SD-302
Sponsored in part by National Institutes of Health, Bethesda, Md. See also AD-783 872.

Descriptors: *Central processing units, *Modules(Electronics), *Logic devices, Memory devices, Shift registers, Input output devices, Data processing terminals.
Identifiers: *Logic design, Arithmetic and logic units, *Macromodules.

This set of documents represents an attempt to bring together in one place sufficient material to enable the reader to obtain a reasonable overview of the major ideas and conceptions that gave rise to the macromodule development project at Washington University, and to report and record some of the details of the ensuing development effort and its results. Part 1 of the report deals with the development of Phase I macromodules, of which over 800 modules of 17 types have been constructed and made part of a working inventory that resides at Washington University. The volume contains two excerpted reprints that present the initial conception of macromodules and means for implementing them as seen in the early days of the project, and a third reprinted report that presents a summary and overview as of the autumn of 1972.

AD-783 872/5GA PC$4.75/MF$2.25
Washington Univ St Louis Mo Computer Systems Lab
MACROMODULAR COMPUTER DESIGN. PART 1. DEVELOPMENT OF MACROMODULES. VOLUME II. A MACROMODULE USER'S MANUAL.
Final rept.,
Christine E. Dickson. Feb 74, 133p* Rept no. TR-45
Contract SD-302
Sponsored in part by National Institutes of Health, Bethesda, Md. Also published as rept. no. TR-25. See also AD-783 873 and AD-873 871.

Descriptors: *Central processing units, *Modules(Electronics), *Logic devices, Memory devices, Shift registers, Input output devices, Data processing terminals, Computer programming.
Identifiers: *Logic design, *Macromodules, Arithmetic and logic units.

The document serves as a comprehensive user's manual for macromodules. It supplies information on module capabilities and other facts needed in system design, and also gives the physical details necessary to the user in constructing and operating his system. Expalanations are at the level of an 'electronically naive' user, but some knowledge of machine-language programming is assumed. (Author)

AD-783 873/3GA PC$5.50/MF$2.25
Washington Univ St Louis Mo Computer Systems Lab
MACROMODULAR COMPUTER DESIGN. PART 1. DEVELOPMENT OF MACROMODULES. VOLUME III. DESIGN OF PHASE I MACROMODULES.
Final rept. 1 Apr 65-1 Dec 73,
Christine D. Coaker. Feb 74, 197p* Rept no. TR-46
Contract SD-302
Sponsored in part by National Institutes of Health, Bethesda, Md. See also AD-783 874 and AD-783 872.

Descriptors: *Central processing units, *Modules(Electronics), *Logic devices, Circuit interconnections, Transmission lines, Power supplies, Printed circuits, Reliability(Electronics).
Identifiers: *Logic design, *Macromodules, Flip flops.

The volume attempts to reconstruct the rationale for the major design decisions that were made in the development of Phase One macromodules, and presents a review of the internal architecture, intercommunication, electrical and mechanical design. Material describing the interfacing of macromodular systems to other computers is also included. The level of detail presented is intermediate, and assumes a general familiarity with the concept of macromodules and their usage. (Modified author abstract)

AD-783 874/1GA PC$3.75/MF$2.25
Washington Univ St Louis Mo Computer Systems Lab
MACROMODULAR COMPUTER DESIGN. PART 1. DEVELOPMENT OF MACROMODULES. VOLUME IV. THE SYNCHRONIZER 'GLITCH' PROBLEM.
Final rept. 1 Apr 65-1 Dec 73,
Thomas J. Chaney. Feb 74, 60p* Rept no. TR-47
Contract SD-302
Sponsored in part by National Institutes of Health, Bethesda, Md. See also AD-783 875 and AD-783 873.

Descriptors: *Central processing units, *Modules(Electronics), *Logic devices, Synchronization(Electronics), Reliability(Electronics), Switching circuits.
Identifiers: *Logic design, *Macromodules, Flip flops.

There is a fundamental problem in synchronizing communication between any two concurrently operating digital systems that lack a common time reference. This problem involves the inability to build a completely reliable synchronizer or arbiter that will work in a prescribed amount of time. Stimulated by the need for an interlock macromodule design of predictable reliability, the inability to find evidence of previous studies, and indications that this problem has been responsible for significant reduction in the reliability of several commercial machines, the author undertook theoretical and experimental studies of this problem. The results to date of these studies are documented in the volume. (Author)

AD-783 875/8GA PC$3.75/MF$2.25
Washington Univ St Louis Mo Computer Systems Lab
MACROMODULAR COMPUTER DESIGN. PART 1. DEVELOPMENT OF MACROMODULES. VOLUME V. LABORATORY PERSONNEL AND BIBLIOGRAPHY.
Final rept. 1 Apr 65-1 Dec 73,
Christine D. Coaker. Feb 74, 75p* Rept no. TR-48
Contract SD-302
Sponsored in part by National Institutes of Health, Bethesda, Md. See also AD-783 876 and AD-783 874.

Descriptors: *Central processing units, *Modules(Electronics), *Logic devices, Scientific research, Computer personnel, Bibliographies.
Identifiers: *Logic design, *Macromodules.

The volume gives names and titles of all personnel associated with the Macromodular Computer Design project. Titles, authors, dates and abstracts of relevant technical reports and Technical Memoranda originating during this period are given, as well as a bibliography of related Washington University theses and dissertations and of publications in the open literature. (Modified author abstract)

AD-783 876/6GA PC$4.50/MF$2.25
Washington Univ St Louis Mo Computer Systems Lab
MACROMODULAR COMPUTER DESIGN. PART 2. MANUFACTURING DESCRIPTION. VOLUME I. GENERAL STANDARDS AND SYSTEM MAINTENANCE.
Final rept. 1 Apr 65-31 Dec 73,
Norman T. Kinch. Feb 74, 125p* Rept no. TR-30
Contract SD-302
Sponsored in part by National Institutes of Health, Bethesda, Md. See also AD-783 877 and AD-783 875.

Descriptors: *Central processing units, *Modules(Electronics), *Logic devices, Finishes, Printed circuits, Control systems, Cermets, Resistors, Standards, Maintenance, Wiring diagrams.
Identifiers: *Logic design, *Macromodules.

Metal finishes, assembly specifications for printed circuit boards, standards for manufacture of printed circuit boards, description of electrical and mechanical properties of macromodular data and control cables, manufacturing specifications of Sprague LTN-2 and LTN-3 resistor networks, description and data sheets of BERNE, Inc. CTS 750 cermet resistor networks, wiring paths and pictorial assembly drawings of types of faceplate subassemblies are given. (Author)

AD-783 877/4GA PC$4.50/MF$2.25
Washington Univ St Louis Mo Computer Systems Lab
MACROMODULAR COMPUTER DESIGN. PART 2. MANUFACTURING DESCRIPTION. VOLUME II. ELECTRONICS PACKAGE ASSEMBLY.
Final rept. 1 Apr 65-31 Dec 73,
Mishell J. Stucki. Feb 74, 122p* Rept no. TR-31
Contract SD-302
Sponsored in part by National Institutes of Health, Bethesda, Md. See also AD-783 878 and AD-783 876.

Descriptors: *Central processing units, *Modules(Electronics), *Logic devices, Shift registers, Printed circuits, Wiring diagrams.
Identifiers: *Logic design, *Macromodules, Arithmetic and logic units.

Manufacturing documents, including parts lists, assembly pictorials, and adjustment procedures for the LOGIC, ARITHMETIC, SHIFT, COMPARE and REGISTER macromodule electronic subassemblies are given. (Author)

AD-783 878/2GA PC$4.00/MF$2.25
Washington Univ St Louis Mo Computer Systems Lab
MACROMODULAR COMPUTER DESIGN. PART 2. MANUFACTURING DESCRIPTION. VOLUME III. ELECTRONIC PACKAGE ASSEMBLY.
Final rept. 1 Apr 65-31 Dec 73,
Mishell J. Stucki. Feb 74, 91p* Rept no. TR-32
Contract SD-302
Sponsored in part by National Institutes of Health, Bethesda, Md. See also AD-783 879 and AD-783 877.

Descriptors: *Central processing units, *Modules(Electronics), *Logic devices, Decoding, Printed circuits, Wiring diagrams.
Identifiers: *Logic design, *Macromodules.

Manufacturing documents, including parts lists, assembly pictorials, and adjustment procedures for the DECODE, LOAD, CALL, MERGE and DATA BRANCH macromodule electronic subassemblies are given. (Author)

AD-783 879/0GA PC$5.75/MF$2.25
Washington Univ St Louis Mo Computer Systems Lab
MACROMODULAR COMPUTER DESIGN. PART 2. MANUFACTURING DESCRIPTION. VOLUME IV. ELECTRONIC PACKAGE ASSEMBLY.
Final rept. 1 Apr 65-31 Dec 73,
Charles E. Molnar. Feb 74, 214p* Rept no. TR-33
Contract SD-302

Sponsored in part by National Institutes of Health, Bethesda, Md. See also AD-783 880 and AD-783 878.

Descriptors: *Central processing units, *Modules(Electronics), *Logic devices, Memory devices, Printed circuits, Wiring diagrams.
Identifiers: *Logic design, *Macromodules.

Manufacturing documents, including parts lists, assembly pictorials, and adjustment procedures for the MEMORY, GENERAL MEMORY CONTROLLER, INTERLOCK, MULTIPLY, D/A and FUNCTION CALLER macromodule elctronic subassemblies are given. (Author)

AD-783 880/8GA PC$3.75/MF$2.25
Washington Univ St Louis Mo Computer Systems Lab
MACROMODULAR COMPUTER DESIGN. PART 2. MANUFACTURING DESCRIPTION. VOLUME V. LOGIC DRAWINGS.
Final rept. 1 Apr 65-31 Dec 73,
Mishell J. Stucki. Feb 74, 74p* Rept no. TR-34
Contract SD-302
Sponsored in part by National Institutes of Health, Bethesda, Md. See also AD-783 881 and AD-783 879.

Descriptors: *Central processing units, *Modules(Electronics), *Logic devices, Memory devices, Wiring diagrams.
Identifiers: *Logic design, *Macromodules.

The volume contains the circuit diagrams for the vertical boards used in the macromodule electronic subassemblies. (Author)

AD-783 881/6GA PC$4.00/MF$2.25
Washington Univ St Louis Mo Computer Systems Lab
MACROMODULAR COMPUTER DESIGN. PART 2. MANUFACTURING DESCRIPTION. VOLUME VI. PRINTED CIRCUIT BOARD OUTLINES AND ELECTRONIC PACKAGE MECHANICAL DRAWINGS.
Final rept. 1 Apr 65-31 Dec 73,
Robert J. Arnzen. Feb 74, 83p* Rept no. TR-35
Contract SD-302
Sponsored in part by National Institutes of Health, Bethesda, Md. See also AD-783 880.

Descriptors: *Central processing units, *Modules(Electronics), *Logic devices, Printed circuits, Mechanical drawings.
Identifiers: *Logic design, *Macromodules.

Complete mechanical drawings regarding the manufacture of components and assembly specifications for the macromodular electronic cases and printed circuit board routing dimensions for macromodular electronic assemblies are given. (Author)

AD-783 882/4GA PC$4.00/MF$2.25
Washington Univ St Louis Mo Computer Systems Lab
MACROMODULAR COMPUTER DESIGN. PART 2. MANUFACTURING DESCRIPTION. VOLUME VII. FACEPLATE SPECIFICATIONS.
Final rept. 1 Apr 65-31 Dec 73,
Gerald C. Johns. Feb 74, 86p* Rept no. TR-36
Contract SD-302
Sponsored in part by National Institutes of Health, Bethesda, Md. See also AD-783 881.

Descriptors: *Central processing units, *Modules(Electronics), *Logic devices, Electrical equipment, Mechanical components, Assembly, Specifications.
Identifiers: *Logic design, *Macromodules, Faceplates.

Specifications for the construction of Macromodular Faceplate Box assemblies are contained in the report. Also included are all electrical and mechanical specifications for common subassemblies. Certain general assembly techniques are specified. (Author)

AD-783 883/2GA PC$4.00/MF$2.25
Washington Univ St Louis Mo Computer Systems Lab
MACROMODULAR COMPUTER DESIGN. PART 2. MANUFACTURING DESCRIPTION. VOLUME VIII. FACEPLATE OVERLAYS, OVERLAY LABELS AND FACEPLATE BOXES, TYPES 1-4.
Final rept. 1 Apr 65-31 Dec 73,
George L. Bickmore. Feb 74, 94p* Rept no. TR-37
Contract SD-302
Sponsored in part by National Institutes of Health, Bethesda, Md. See also AD-783 882.

Descriptors: *Central processing units, *Modules(Electronics), *Logic devices, Electrical equipment, Mechanical components, Overlays, Assembly, Wiring diagrams.
Identifiers: *Logic design, *Macromodules, Faceplates.

The document is divided into two segments. The first segment, pages 100.1-1 through 100.1-5, contains the information necessary to duplicate Macro-module Faceplate Overlays and Overlay Labels plus a brief functional description of the Overlay. The second segment of this volume contains the necessary procedures and wiring lists for the assembly of Macro-Module Faceplate Box types 1 through 4. (Author)

AD-783 884/0GA PC$4.00/MF$2.25
Washington Univ St Louis Mo Computer Systems Lab
MACROMODULAR COMPUTER DESIGN. PART 2. MANUFACTURING DESCRIPTION. VOLUME IX. FACEPLATE BOXES, TYPES 5-10.
Final rept. 1 Apr 65-31 Dec 73,
George L. Bickmore. Feb 74, 93p* Rept no. TR-38
Contract SD-302
Sponsored in part by National Institutes of Health, Bethesda, Md. See also AD-783 883.

Descriptors: *Central processing units, *Modules(Electronics), *Logic devices, Electrical equipment, Mechanical components, Assembly, Wiring diagrams.
Identifiers: *Logic design, *Macromodules, Faceplates.

The document contains the necessary procedures and wiring lists for the assembly of Macro-Module Faceplate Box types 5 through 10. (Author)

AD-783 885/7GA PC$4.00/MF$2.25
Washington Univ St Louis Mo Computer Systems Lab
MACROMODULAR COMPUTER DESIGN. PART 2. MANUFACTURING DESCRIPTION. VOLUME X. PARAMETER SWITCHES, MINI CONSOLE, AND L.E.D. DATA INDICATOR.
Final rept. 1 Apr 65-31 Dec 73.
Feb 74, 99p* Rept no. TR-39
Contract SD-302
Sponsored in part by National Institutes of Health, Bethesda, Md. See also AD-783 884.

Descriptors: *Central processing units, *Modules(Electronics), *Logic devices, Switches, Consoles, Light emitting diodes, Assembly.
Identifiers: *Logic design, *Macromodules.

The assembly procedures for the Parameter Switch, Mini Console, and LED Data Indicator is given here along with the parts lists and description of special tools required for proper assembly. (Author)

AD-783 886/5GA PC$4.00/MF$2.25
Washington Univ St Louis Mo Computer Systems Lab
MACROMODULAR COMPUTER DESIGN. PART 2, MANUFACTURING DESCRIPTION. VOLUME XI. CABLES.
Final rept. 1 Apr 65-31 Dec 73,
Gerald C. Johns. Feb 74, 80p* Rept no. TR-40
Contract SD-302
Sponsored in part by National Institutes of Health, Bethesda, Md. See also AD-783 885.

Descriptors: *Central processing units, *Modules(Electronics), *Logic devices, Cable assemblies, Manufacturing, Specifications.
Identifiers: *Logic design, *Macromodules.

Manufacturing information for the construction and testing of macromodular cables is given. Included are the DATA CABLE, CONTROL CABLE, PEDESTAL DAISY CHAIN CABLE, and FUNCTION CALLER CABLE. (Author)

AD-783 887/3GA PC$4.50/MF$2.25
Washington Univ St Louis Mo Computer Systems Lab
MACROMODULAR COMPUTER DESIGN. PART 2. MANUFACTURING DESCRIPTION. VOLUME XII. FRAME SECTION AND BASE PEDESTAL.
Final rept. 1 Apr 65-31 Dec 73,
Robert J. Arnzen. Feb 74, 125p* Rept no. TR-41
Contract SD-302
Sponsored in part by National Institutes of Health, Bethesda, Md. See also AD-783 886.

Descriptors: *Central processing units, *Modules(Electronics), *Logic devices, Electrical equipment, Mechanical components, Manufacturing, Assembly, Specifications.
Identifiers: *Logic design, *Macromodules.

Complete manufacturing documents regarding electrical and mechanical components and assembly procedures for the macromodular frame block and base-pedestal are contained in the report. (Author)

AD-783 888/1GA PC$4.50/MF$2.25
Washington Univ St Louis Mo Computer Systems Lab
MACROMODULAR COMPUTER DESIGN. PART 2. MANUFACTURING DESCRIPTION. VOLUME XIII. FRAME SECTION AND BASE PEDESTAL.
Final rept. 1 Apr 65-31 Dec 73,
Robert J. Arnzen. Feb 74, 120p* Rept no. TR-42
Contract SD-302
Sponsored in part by National Institutes of Health, Bethesda, Md. See also AD-783 887.

Descriptors: *Central processing units, *Modules(Electronics), *Logic devices, Electrical equipment, Mechanical components, Manufacturing, Assembly, Specifications.
Identifiers: *Logic design, *Macromodules.

A complete description of mechanical and electrical components, assembly specifications, and procedures for manufacture of the macromodular frame block and base-pedestal comprises the report. (Author)

AD-783 889/9GA PC$4.50/MF$2.25
Washington Univ St Louis Mo Computer Systems Lab
MACROMODULAR COMPUTER DESIGN. PART 2. MANUFACTURING DESCRIPTION. VOLUME XIV. PEDESTAL CONTROLLER, FAN MODULE, CHANNEL COUPLER AND JIGS.
Final rept. 1 Apr 65-31 Dec 73,
Robert J. Arnzen. Feb 74, 116p* Rept no. TR-43
Contract SD-302
Sponsored in part by National Institutes of Health, Bethesda, Md. See also AD-783 888.

Descriptors: *Central processing units, *Modules(Electronics), *Logic devices, Electrical equipment, Mechanical components, Manufacturing, Specifications.

Identifiers: *Logic design, *Macromodules.

A complete description of electrical and mechanical components, assembly jigs and procedures for manufacture of the macromodular base-pedestal controller, fan module and channel coupler is given. (Author)

AD-783 890/7GA PC$4.50/MF$2.25
Washington Univ St Louis Mo Computer Systems Lab
MACROMODULAR COMPUTER DESIGN. PART 3. RESTRUCTURED MACROMODULES.
Final rept. 1 Apr 65-31 Dec 73,
Robert J. Arnzen, and Christine D. Coaker. Feb 74, 108p* Rept no. TR-49
Contract SD-302
Sponsored in part by National Institutes of Health, Bethesda, Md. See also AD-783 889 and AD-783 871.

Descriptors: *Central processing units, *Modules(Electronics), *Logic devices, Fabrication, Computer programming, Pattern recognition, Algorithms.
Identifiers: *Logic design, *Macromodules.

The document reviews the current status of the design and discusses progress towards completion of an initial prototype set of restructured macromodules. Substantial details of the restructured design are given including descriptions and photographs of the crate structure, identification of an initial set of module types, and detailed discussion of some of the engineering issues raised by the restructuring. Estimates of the cost and performance of restructured macromodules are given and a comparison of restructured macromodules with other means for implementing a pattern recognition algorithm is presented. (Modified author abstract)

AD-783 896/4GA PC$5.50/MF$2.25
Georgia Univ Athens Dept of Statistics and Computer Science
METHODS OF CONVERSION OF COMPUTER DEPENDENT INTERACTIVE PROGRAMS. EXAMPLE: ANALYSIS OF COVARIANCE,
Judith Lantzy Hayward, and Rolf E. Bargmann. Jul 74, 180p* Rept nos. TR-105, THEMIS-UGA-30
Contract N00014-69-A-0423

Descriptors: *Interactive graphics, *Computer programs, Subroutines, Conversion, FORTRAN, Statistical analysis.
Identifiers: Conversational programming, Computer program transferability, IBM 360 computers, CDC 6400 computers.

The report contains instructions and examples for converting conversational programs from the GMS package on the IBM 360/2250 programs which operates remotely the CDC 6400 through INTERCOM under the SCOPE monitor. Steps in the procedure are outlined, and important differences are explained fully in separate chapters using the analysis of covariance unit as an example. Important phases of the conversion which are explained in detail are the overlay structure, the use of the graphics subroutines (including simulation of the Program Function Key's), direct access input/output, analysis output, and various other system differences. In addition, a user example is given to show the effect of the conversion on the conversational program. Listings of the FORTRAN programs are contained in the Appendix. (Author)

AD-783 945/9GA PC$3.25/MF$2.25
Naval Ship Research and Development Center Bethesda Md
PARTITIONED-DATA-SET UTILITY ROUTINES FOR THE CONTROL DATA CDC-6700 COMPUTER.
Final rept.,
Roger J. Martin. Apr 74, 32p Rept no. NSRDC-4354

Descriptors: *Computer programming, Subroutines, Control sequences, FORTRAN.
Identifiers: CDC 6700 computers, *Utility routines.

The report describes a system of computer software routines which enable the user to build and maintain any number of data partitions on a single CDC-6700/SCOPE 3.3 direct-access file. The partition may contain source code, object code, absolute code, or data of any type. The Partitioned-Data-Set Utility Routines enable the user to add, delete, rename or retrieve any partition on the data set, and to obtain a listing of the partition names. creation dates, lengths and paswords. These functions can be executed either through SCOPR control cards or subroutine calls. (Author)

AECL-4702 PC$5.50/MF$2.25
Atomic Energy of Canada Ltd., Chalk River, Ontario. Chalk River Nuclear Labs.
FREAK: A CDC 6600 PROGRAM FOR MAKING FREQUENCY DISTRIBUTION TABLES.
L. E. Evans. Mar 74, 48p
U.S. Sales Only.

Descriptors: (*F codes, Frequency range), (*Frequency range, *Tables), Cdc computers, Computer codes, Distribution, Statistics.

For abstract, see NSA 30 04, number 12071.

ANCR-1153 PC$4.00/MF$2.25
Aerojet Nuclear Co., Idaho Falls, Idaho.
REBAL COMPUTER PROGRAM SERIES FOR LINEAR PROPAGATION OF UNCERTAINTY.
J. B. Fussell, and N. H. Marshall. May 74, 25p
Contract AT(10-1)-1375

Descriptors: (*Computer codes, *R codes), Computer calculations, Cost, Errors, Finite difference method, Numerical solution, Probability, Safety, Statistics, Variations.

For abstract, see NSA 30 05, number 14700.

ANL-8040(Supp.1) PC$5.45/MF$2.25
Argonne National Lab., Ill.
USAEC COMPUTER PROGRAM SUMMARIES: NUMBERS 55 THROUGH 123.
Apr 74, 68p
Contract W-31-109-eng-38

Descriptors: (*Us aec, *Computer codes), (*Anl, Computer codes).

For abstract, see NSA 30 04, number 12072.

BNL-50416 PC$5.45/MF$2.25
Brookhaven National Lab., Upton, N.Y.
USERS' MANUAL FOR THE MODEL AND LINDA DESIGN AUTOMATION PROGRAMS.
A. Peskin. Feb 74, 35p
Contract AT(30-1)-16

Descriptors: (*L codes, *Manuals), (*M codes, Manuals), Automation, Computer codes, Cost, Design, Electronic circuits, Simulation.

For abstract, see NSA 30 04, number 12074.

BNWL-SA-4990 PC$11.25/MF$2.25
Battelle Pacific Northwest Labs., Richland, Wash.
INTERACTIVE COMPUTER GRAPHICS SYSTEM APPLIED TO THE LIFE SCIENCES.
C. R. Watson. 14 Dec 73, 164p
Contract AT(45-1)-1830

Descriptors: (*Biology, *Data processing), (*Ecology, Data processing), B codes, Communications, Computer calculations, Computer codes, Computers, Data acquisition systems, Data compilation, Programming, Programming languages.

For abstract, see NSA 30 05, number 14701.

CEA-N-1686 PC$4.00/MF$2.25
CEA Centre d'Etudes Nucleaires de Saclay, 91 - Gif-sur-Yvette (France).
RELIABILITY OF SOME DATA HANDLING ELECTRONIC EQUIPMENT MANUFACTURED BY INTERTECHNIQUE.
R. Gache. Dec 73, 9p
In French. U.S. Sales Only.

Descriptors: (*Data acquisition systems, *Reliability), Data processing, Electronic equipment, Integrated circuits, Transistors.

For abstract, see NSA 30 04, number 09655.

COM-74-11289/7GA
Mag Tape $97.50;Foreign $122.50
National Bureau of Standards, Washington, D.C.
COUNTIES AND COUNTY EQUIVALENTS OF THE STATES OF THE UNITED STATES.
Federal information processing standards (data file),
Hazel E. McEwen. 15 Sep 73, 1 reel mag tape
FIPS-PUB-6-2-T NBS/DF-74/001
Supersedes PB-190 604, NBS/DF-73/006, PB-190 605, and NBS/DF-73/005.
Specify tape recording mode desired: 7 track, 556 or 800bpi, Bcd, odd or even parity; or 9 track, 800bpi, Ebcdic, odd parity. Also available in punched cards at same price. Price includes documentation, COM-73-50829.

Descriptors: *Data processing, *Standards, *Local government, National government, Magnetic tape.
Identifiers: *Federal information processing standards.

This data file provides names and codes for representing the counties of the 50 states or county equivalents thereof for use in the interchange of formatted machine sensible data. Also included in the set of codes are the independent cities of maryland, Missouri, Nevada, and Virginia and the Census Divisions and boroughs of Alaska. These codes are available on Hollerith punched cards. The following data elements are provided: State abbreviation, State code, county name, and county code. File use and description are found in COM-73-50829.

COM-74-11290/5GA
Mag Tape $97.50;Foreign $122.50
National Bureau of Standards, Washington, D.C.
COUNTRIES, DEPENDENCIES, AND AREAS OF SPECIAL SOVEREIGNTY.
Federal information processing standards (data file),
Hazel E. McEwen. 15 Jun 74, 1 reel mag tape
FIPS-PUB-10-1-T NBS/DF-74/002
Supersedes PB-190 720 and NBS/DF-73/004.
Specify tape recording mode desired: 7 track, 556 or 800bpi, Bcd, odd or even parity; or 9 track, 800bpi, Ebcdic, odd parity. Also available in punched cards at same price. Price includes documentation, COM-74-50572.

Descriptors: *Data processing, *Standards, *National government, Magnetic tape, Local government.
Identifiers: *Federal information processing standards.

This data file provides a list of geographical-political entities of the world and associated standard codes. These entities include independent states, dependent areas, areas of quasi-independence, noncontiguous territories, possessions without sovereignty, political regimes not recognized by the United States, and outlying areas of the United States. These codes are also available on Hollerith punched cards. The following data elements are provided; Standard country code and country name. File use and description are found in COM-74-50572.

COM-74-11291/3GA
Mag Tape $97.50;Foreign $122.50
National Bureau of Standards, Washington, D.C.
STANDARD METROPOLITAN STATISTICAL AREAS.
Federal information processing standards (data file),
Hazel E. McEwen. 30 Jun 74, 1 reel mag tape
FIPS-PUB-8-4-T NBS/DF-74/003
Supersedes COM-73-11319 and NBS/DF-73/007.
Specify tape recording mode desired: 7 track, 556 or 800bpi, Bcd, odd or even parity; or 9 track, 800bpi, Ebcdic, odd parity. Also available in punched cards at same price. Price includes documentation, COM-74-50631.

Descriptors: *Data processing, *Standards, *National government, Magnetic tape.
Identifiers: *Federal information processing standards.

This data file provides standard identifications and codes for representing Standard Metropolitan Statistical Areas for the interchange of machine sensible data among agencies. It supersedes FIPS 8-3, Standard Metropolitan Statistical Areas, dated August 15, 1973. The general concept of a standard Metropolitan Statistical Area, commonly referred to as 'SMSA' is one of an integrated economic and social unit with a recognized large population nucleus. The following data elements are provided: SMSA title (Name) and SMSA code.

COM-74-11454/7GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
THE USE OF COMPUTERS IN SOLVING MATHEMATICAL PROBLEMS. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for Jun 71-Jul 74,
David W. Grooms. Sep 74, 189p NTIS/WIN-74/071

Descriptors: *Computer programming, *Theory of equations, *Differential equations, *Computation, Linear algebraic equations, Partial differential equations, Equations of motion, Applications of mathematics, Nonlinear algebraic equations, Nonlinear differential equations, Numerical integration, Numerical analysis.

This bibliography contains 172 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. The report cites research into the computer solution of algebraic and differential equations with the necessary software for implementation.

COM-74-50631/2GA PC-GPO/MF$2.25-NTIS
National Bureau of Standards, Washington, D.C.
STANDARD METROPOLITAN STATISTICAL AREAS. FEDERAL GENERAL DATA STANDARD REPRESENTATIONS AND CODES.
Federal information processing standards.
30 Jun 74, 21p FIPS-PUB-8-4
Supersedes rept. no. FIBS-PUB-8-3 dated 15 Aug 73, COM-73-50685.
Paper copy available from GPO $0.60 as C13.52:8-4.

Descriptors: *Hollerith code, *National government, *Data processing, *Standards, Urban areas, Population.
Identifiers: *Federal information processing standards, *Standard metropolitan statistical areas.

The publication provides standard identifications and codes for representing Standard Metropolitan Statistical Areas for the interchange of machine sensible data among agencies. It supersedes FIPS 8-3, Standard Metropolitan Statistical Areas, dated 1973 August 15. The general concept of a Standard Metopolitan Statistical Area, commonly referred to as 'SMSA' is one of an integrated economic and social unit with a recognized large population nucleus. The codes are available on Hollerith punched cards. The following data elements are provided: SMSA Title (Name) and SMSA Code.

COM-74-50711/2GA Not available NTIS
National Bureau of Standards, Washington, D.C.
PROGRAMMING AND CONTROL LANGUAGES FOR AUTOMATED LABORATORY EXPERIMENTATION.
Final rept.,
Jerome A. Hudson. 1974, 9p
Pub. in Astronomy and Astrophysics, Supplement Series v15 p487-495 1974.

Descriptors: *Programming languages, Process control, Laboratories, Automation, Compilers.

The problem of coding programs for computers used to control laboratory experiments is discussed. Several compilers which were developed for this purpose are described. The problem of developing 'experimenter-proof' control languages is also addressed, and several approaches are mentioned.

EUR-5113 PC$6.50/MF$2.25
Commission of the European Communities, Geel (Belgium). Central Bureau for Nuclear Measurements.
CBNM SATELLITE COMPUTER SYSTEM. PART 1. THE MULTIPARAMETER SYSTEM USER HANDBOOK.
F. Colling. Apr 74, 66p
U.S. Sales Only.

Descriptors: (*Satellites, *Computers), Data acquisition, Ibm computers, Manuals, Real time systems.

For abstract, see NSA 30 04, number 12079.

EUR-5116 PC$8.25/MF$2.25
Commission of the European Communities, Ispra (Italy). Joint Nuclear Research Center.
SLC-II SYSTEM LANGUAGE TRANSLATOR PACKAGE CONCEPTS AND FACILITIES.
S. Perschke, G. Fassone, C. Geoffrion, W. Kolar, and H. Fangmeyer. Apr 74, 103p
U.S. Sales Only.

Descriptors: Algorithms, Automation, Data processing, Documentation, Graphic, Programming languages, Translators.

For abstract, see NSA 30 04, number 12080.

IFA-MC-17-1974 PC$4.00/MF$2.25
Institutul de Fizica Atomica, Bucharest (Romania).
PROGRAM FOR THE SIMULATION OF THE OPERATION OF A CIRCUIT WITH A LOGIC CIRCUIT.
I. Buruiana. 1974, 18p
In Rumanian. U.S. Sales Only.

Descriptors: (*Logic circuits, *Simulation), Computer codes, Operation.

For abstract, see NSA 30 04, number 12177.

IPP-2-220 PC$7.75/MF$2.25
Max-Planck-Institut fuer Plasmaphysik, Garching/Muenchen (F.R. Germany).
IPP-NETZ, THE NETWORK PLANNING COMPUTER PROGRAM.
E. Mueller, and H. Schmid. Mar 74, 93p
In German. U.S. Sales Only.

Descriptors: (*I codes, *Planning), Availability, Computer codes, Cost, Information.

For abstract, see NSA 30 04, number 12081.

JPRS-62257 PC$3.00/MF$2.25
Joint Publications Research Service, Arlington, Va.
ASVT-M CONTROL COMPUTER COMPLEXES AND THE FUTURE OF THEIR DEVELOPMENT,
B. N. Naumov. 17 Jun 74, 8p
Trans. of Pribory i Sistemy Upravleniya (USSR) n4 p4-5 1974.

Descriptors: *Computers, *Automatic control equipment, Automata theory, Translations, USSR.

The report contains a discussion of ASVT-M control computer systems and their future development. Firmed-up development plans for the systems for 1975 through 1980 are presented.

KFK-1891 PC$5.75/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Reaktorbauelemente.
EKAPPA: A COMPUTER PROGRAM FOR THE CALCULATION OF THE STEAM ISENTROPE EXPONENTS. ANALYSIS AND PROGRAM DESCRIPTION.
U. Harten, and H. J. Ziegler. Dec 73, 52p
In German. U.S. Sales Only.

Descriptors: (*Computer codes, *E codes), (*Steam, *Entropy), Steam quality, Superheating, Thermodynamics.

For abstract, see NSA 30 05, number 12648.

KFK-1909 PC$4.50/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Reaktorbauelemente.
REGEN: A FORTRAN PROGRAM FOR THE THERMOHYDRAULIC DESIGN OF A REGENERATIVE COOLING TOWER.
H. J. Neitzel, and K. Wiehr. Feb 74, 29p
In German. U.S. Sales Only.

Descriptors: (*Computer codes, *R codes), (*Cooling towers, *Design), Fortran, Heating, Hydraulics, Thermodynamic properties.

For abstract, see NSA 30 05, number 14736.

KFK-1967 PC$8.75/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Datenverarbeitung in der Technik.
COORDINATION OF CRITICAL ACCESS TO DISTRIBUTED DATABANKS IN COMPUTER NETWORKS BASED ON DECENTRALIZED CONTROL.
E. Holler. Apr 74, 112p
In German. U.S. Sales Only.

Descriptors: (*Data processing, *Control), Communications, Computers, Programming, Simulation.

For abstract, see NSA 30 05, number 14705.

LBL-2676 PC$4.25/MF$2.25
California Univ., Berkeley Lawrence Berkeley Lab.
BARELY INTELLIGENT TERMINAL.
H. H. Holmes. Mar 74, 22p CONF-740512-10

Descriptors: Communications, Computer graphics, Computers, Cost, Data processing, Display devices, Images, Interactive display devices, Investment, Programming.

For abstract, see NSA 30 05, number 14706.

LBL-2679 PC$4.00/MF$2.25
California Univ., Berkeley Lawrence Berkeley Lab.
COSTS AND BENEFITS OF USING MINICOMPUTERS IN TELEPROCESSING.
R. L. Fink. 3 Apr 74, 7p CONF-740405-2
Contract W-7405-eng-48

Descriptors: (*Computers, *Cost benefit analysis), Communications, Data processing, Data transmission, Reliability.

For abstract, see NSA 30 05, number 14707.

PB-233 045/4GA PC$4.75/MF$2.25
Stanford Univ., Calif. Dept. of Computer Science.
PROVING THAT COMPUTER PROGRAMS TERMINATE CLEANLY,
Richard L. Sites. May 74, 146p STAN-CS-74-418

Descriptors: *Computer programming, Stopping, Semantics, Mathematical logic, Programming languages, Algorithms.

A system of techniques is presented for proving mechanically that a computer program terminates cleanly. In the paper, clean termination means that the program has no infinite loops and no semantic errors - no undefined variables, no subscripts out of range, no overflows on a given computer, etc. The techniques are discussed in terms of programs expressed as flow charts, and they have wide application to high-level languages. The work described here complements work done on program correctness, differing particularly by not requiring a description of the correctness properties of a program and by treating the running of programs on machines with finite-range arithmetic.

PB-233 272/4GA PC$6.50/MF$2.25
Illinois Univ., Urbana. Dept. of Computer Science.
RECURSE A PLATO LESSON ON RECURSION.
Master's thesis,
Lawrence Robert Whitlock. May 74, 67p
UIUCDCS-R-74-642
Sponsored in part by National Science Foundation, Washington, D.C.

Descriptors: *Computer programming, *Programmed instruction, Computer programs, Recursive functions, Syntax, Theses.
Identifiers: *PLATO 4 system, *Computer aided instruction, TUTOR programming language.

RECURSE is a lesson for the PLATO 4 computer-based education system. It attempts to give the student a general feel for recursion and introduces him to the use of recursion in recursive definitions and recursive procedures. The report contains a description of the lesson and its development, and a listing of the TUTOR source code.

PB-233 358/1GA PC$5.25/MF$2.25
Colorado Univ., Boulder. Dept. of Computer Science.
NONTERMINALS VERSUS HOMOMORPHISMS IN DEFINING LANGUAGES FOR SOME CLASSES OF REWRITING SYSTEMS.
Final rept.,
A. Ehrenfeucht, and G. Rozenberg. Aug 73, 43p
CU-CS-027-73
Grant NSF-GJ-660
Prepared in cooperation with Utrecht Univ. (Netherlands). Dept. of Mathematics.

Descriptors: *Grammars, *Programming languages, *Automata theory, Homomorphisms, Set theory, Axioms, Theorems.
Identifiers: *Formal languages, Context sensitive grammars, Context free grammars.

Given a rewriting system G (its alphabet, the set of productions and the axiom) one can define the language of G by (1) taking out of all strings generated by G only those which are over a distinguished subalphabet of G, or (2) translating the set of all strings generated by G by a fixed homomorphism. The trade-offs between these two mechanisms for defining languages are discussed for both, 'parallel' rewriting systems from developmental systems hierarchy and 'sequential' rewriting systems from the Chomsky hierarchy.

PB-233 359/9GA PC$5.00/MF$2.25
Colorado Univ., Boulder. Dept. of Computer Science.
ON THE STRUCTURE OF POLYNOMIALLY BOUNDED DOL SYSTEMS.
Final rept.,
A. Ehrenfeucht, and G. Rozenberg. Jul 73, 40p
CU-CS-023-73
Grant NSF-GJ-660
Prepared in Cooperation with Utrecht Univ. (Netherlands). Dept. of Mathematics.

Descriptors: *Programming languages, *Automata theory, Polynomials, Set theory, Axioms, Computation.
Identifiers: *Formal languages, Computational complexity.

Polynomially bounded DOL systems are investigated. Necessary and sufficient conditions on the set of productions of a DOL system for yielding a polynomially bounded growth function are given. The relation between the minimal degree of a polynomial bounding a DOL system and the structure of its set of productions is investigated.

PB-233 369/8GA PC$13.25/MF$2.25
Illinois Univ., Urbana. Dept. of Computer Science.
PROGRAM SPEEDUP THROUGH CONCURRENT RECORD PROCESSING.
Doctoral thesis,
Richard Ernest Strebendt. Oct 74, 201p
UIUCDCS-R-74-638 NSF-OCA-GJ36936-000004
Grant NSF-GJ-36936

Descriptors: *Multiprocessing, *Compilers, COBOL, Computer storage devices, Arithmetic and logic units, Input output devices, Queueing theory, Multiprogramming.

Much effort in the past has been devoted to speeding up computational programs through the use of multiprocessing. The paper examines the problem of speeding up data processing programs which typically do not contain a great deal of computation. A machine organization is proposed which is capable of executing several instruction streams concurrently. Compiler algorithms are described which automatically insert the necessary commands to start and stop instruction streams and to protect common variables which must be accessed sequentially.

PB-233 372/2GA PC$5.50/MF$2.25
Colorado Univ., Boulder. Dept. of Computer Science.
COMPUTER SYSTEM MONITORING TECHNIQUES.
Final rept.,
Gary J. Nutt. Feb 73, 49p CU-CS-013-73
Grant NSF-GJ-660

Descriptors: *Computer systems hardware, *Computer systems programs, Efficiency, Multiprocessing, Multiprogramming, Systems analysis.

The paper discusses both hardware and software monitoring techniques that have been employed to assess the performance of computer systems. The relative assets and liabilities of each approach are described, as well as the difficulties encountered in the measurement of a computer system by any means. The environment of a measurement project is also considered.

PB-233 402/7GA PC$3.25/MF$2.25
Illinois Univ., Urbana. Dept. of Computer Science.
MINIMIZATION OF LOGIC NETWORKS UNDER A GENERALIZED COST FUNCTION.
Technical rept.,
Saburo Muroga, and Hung Chi Lai. Apr 74, 43p*
UIUCDCS-R-74-649
Grant NSF-GJ-40221

Descriptors: *Logic circuits, *Integrated circuits, *Logic design, Switching theory, Mathematical programming, Costs.
Identifiers: Medium scale integrated circuits, Large scale integrated circuits, Integer programming.

Based on the intuitive observation that smaller numbers of gates and connections would usually lead to a more compact network on an integrated circuit, a monotonically increasing function of gate count and connection count is concluded to be a reasonable cost function to be minimized in logical design of a network implemented in IC. Then it is shown that all minimal solutions of such a cost function can be always found among the following: minimal networks with a minimal number of gates as the first objective and a minimal number of connections as the second objective; minimal networks with a minimal number of connections as the first objective and a minimal number of gates as the second objective; and minimal networks which are associated to the above two types of minimal networks.

PB-233 437/3GA PC$5.00/MF$2.25
Purdue Univ., Lafayette, Inc. School of Electrical Engineering.
PREPROCESSING AND FEATURE EXTRACTION OF PICTURE PATTERNS--WITH APPLICATION TO CHEST X-RAY IMAGES,
Y. P. Chien, and K. S. Fu. Apr 74, 158p* TR-EE74-20
Grant NSF-GK-36721

Descriptors: *Pattern recognition, *X rays, Thorax, Images, Heart, Lung, Data processing, Computer programming.
Identifiers: Feature extraction, Image processing, Scene analysis.

A decision function method using the 'spring-component' description concept, is used as the basic algorithm for scene analysis. The proposed algorithm is applied to the chest x-ray for test. To locate the coarse lung boundary, the grey level spatial distribution of five key boundary points is used as local information and the spatial relationship between key boundary points is used as global information. Similarly, if the edge information is used as local information together with the continuity and curvature constraints used as global information, the same basic algorithm can be used to extract the detailed lung boundary. The performance and significance of the proposed scheme is then tested by normal/abnormal classification on the basis of the measurements extracted in the lung field (texture features used) and heart area (geometrical features used). (Modified author abstract)

PB-234 026/3GA PC$3.75/MF$2.25
California Univ., Los Angeles. Dept. of Computer Science.
IMPLEMENTATION OF MADCAP 6 ON UCLA'S 360/91-IMLAC SYSTEM.
Interim technical summary rept. Sep 72-May 74,
Michel A. Melkanoff, Ben C. Moszkowski, and L. Lauterbach. May 74, 68p* UCLA-ENG-7438
NSF/OCA-GJ35719-74381
Grant NSF-GJ-35719

Descriptors: *Programming languages, Compilers, Transformations, Interpreter routines, Computer programming.
Identifiers: *MADCAP 6 programming language, IBM 360/91 computer.

The MADCAP 6 language developed by Los Alamos has been implemented at UCLA. This MADCAP Experimental Support System (MESS) permits users to construct and edit programs in the two-dimensional format of MADCAP 6 uses an IMLAC PDS-1 terminal with 8K memory. The IMLAC communicates with UCLA's 360/91 under TSO through a tie-line. MADCAP programs are stored on the 91 disc file; for now, they are necessarily compiled under batch due to the large size of the compiler which constructs a tree in MADCAP Intermediate Language (MIL). The MIL program is executed by the MADCAP interpreter. (Modified author abstract)

PB-234 027/1GA PC$5.00/MF$2.25
Illinois Univ., Urbana. Dept. of Computer Science.
VIPTRAN2--AN IMPROVED PROGRAMMING LANGUAGE AND ITS COMPILER FOR PROCESS CONTROL EQUATIONS,
Alfred Charles Weaver. May 74, 170p*
UIUCDCS-R-74-643

Descriptors: *Programming languages, *Compilers, Boolean algebra, Computer programs, Process control, Syntax.
Identifiers: *VIPTRAN 2 programming languages.

The solution of some industrial process control problems can be expressed as a system of Boolean algebra equations using variables representing inputs from and outputs to the real world. If this system is solved sequentially, cyclically, and in real time, the outputs may be used directly to control the state of real world devices. VIPTRAN2 is a high-level FORTRAN-like language which allows the programmer to express his Boolean system symbolically in logical (Boolean) equations. The VIPTRAN2 compiler reduces the input to machine code for the VIP process controller, and can plot the resulting system as a relay tree. The concept is extensible to other industrial controllers.

SLA-74-275 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
PRINCIPAL VALUES OF FORTRAN FUNCTIONS ON THE CDC 6600 AND DEC PDP-10.
C. B. Bailey. Jun 74, 7p
Contract AT(29-1)-789

Descriptors: (*Fortran, *Functions), (*Programming languages, Functions), Cdc computers, Geometry, Mathematics, Numerical solution, Pdp computers.

For abstract, see NSA 30 05, number 14709.

TID-4579-R8 PC$13.60/MF$2.25
USAEC Technical Information Center, Oak Ridge, Tenn.
SERIAL TITLES CITED IN NUCLEAR SCIENCE ABSTRACTS.
Mar 74, 506p

Descriptors: (*Information systems, *Indexes), Abstracts, Bibliographies.

For abstract, see NSA 30 04, number 12060.

UCLA-10-P-14-126 PC$4.00/MF$2.25
California Univ., Los Angeles Dept. of Computer Science.
MULTILEVEL MODEL FOR THE SYNTHESIS OF RELIABLE PROGRAMS.
C. Lucena, and G. Estrin. 1974, 17p CONF-740649-1
Contract AT(04-3)-34

Descriptors: Accuracy, Design, Mathematical models, Programming, Reliability, Testing.

For abstract, see NSA 30 05, number 14710.

UCLA-10-P-14-128 PC$4.00/MF$2.25
California Univ., Los Angeles.
EXPERIMENT WITH METHODOLOGIES FOR THE SPECIFICATION OF PROGRAMMING SYSTEMS.
C. J. Lucena, and G. E. Tompkins. 1973, 6p CONF-731147-1
Contract AT(04-3)-34

Descriptors: (*Computers, *Programming), Accuracy, Data processing, Design, Diagrams, Efficiency, Electronic circuits, Errors, Fabrication, Performance, Programming languages, Specifications, Testing.

For abstract, see NSA 30 05, number 14711.

UCLA-34-P-214-1 PC$5.00/MF$2.25
California Univ., Los Angeles.
SURVEY OF PROTECTION STRUCTURES.
G. J. Popek. 1973, 36p
Contract AT(04-3)-34

Descriptors: (*Information, *Security), (*Computers, Security), Accuracy, Control, Economics, Failures, Reliability, Safety.

For abstract, see NSA 30 04, number 12088.

UCRL-51555 PC$13.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
BIBLIOGRAPHY ON COMPUTER OPERATING SYSTEM SECURITY.
R. P. Abbott, L. M. Boone, I. M. Morvay, and S. Tokubo. 15 Apr 74, 199p
Contract W-7405-eng-48

Descriptors: (*Bibliographies, Computers), (*Computers, *Security), Accuracy, Information systems, K codes.

For abstract, see NSA 30 04, number 12089.

UCRL-51582 PC$18.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
INTRODUCTION TO RATS (RISOS/ARPA TERMINAL SYSTEM): AN OPERATING SYSTEM FOR THE DEC PDP-11/45.
C. Landau. 1 Mar 74, 297p
Contract W-7405-eng-48

Descriptors: (*Data processing, *Security), (*Computer codes, *R codes), Automation, Information, Lawrence livermore laboratory, Memory devices, Pdp computers, Programming.

For abstract, see NSA 30 05, number 14713.

UCRL-75379 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
DISPLAYING COMPLEX THREE DIMENSIONAL OBJECTS.
M. J. Archuleta. 20 Mar 74, 13p CONF-740528-1

Descriptors: Algorithms, Computer graphics, Fortran, Images, Shape.

For abstract, see NSA 30 04, number 12090.

UCRL-75541 PC$5.50/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
MTAS/8.
M. J. Allen. 23 May 74, 50p CONF-740533-1

Descriptors: (*Pdp computers, *Programming), (*Computer codes, *M codes), Algorithms, B codes, Data acquisition, Design, F codes, Information, Storage.

For abstract, see NSA 30 05, number 14715.

UCRL-75658 PC$6.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
SOFTWARE FOR NONLINEAR PARTIAL DIFFERENTIAL EQUATIONS.
R. F. Sincovec, and N. K. Madsen. May 74, 57p CONF-740511-6

Descriptors: (*Differential equations, *Numerical solution), Algol, Algorithms, Computer calculations, Efficiency, Finite difference method, Fortran.

For abstract, see NSA 30 05, number 14714.

UCRL-75710 PC$4.75/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
ADVANCED INTERACTIVE PICTURE PROCESSING SYSTEM.
L. Hatfield, and C. Journeay. 22 May 74, 35p CONF-740530-1

Descriptors: Computers, Digital systems, Images, Interactive display devices, Lawrence livermore laboratory, Optical systems.

For abstract, see NSA 30 04, number 12093.

UIUCDCS-F-74-879 PC$7.75/MF$2.25
Illinois Univ., Urbana Dept. of Computer Science.
(SEMI-) VIRTUAL MEMORY MULTI-PROGRAMMING SYSTEM FOR THE MINI-COMPUTER PDP 8/3 (ILLIAC-3) PROGRAM LISTING.
T. W. Wong. May 74, 93p
Contract AT(11-1)-2118

Descriptors: (*Pdp computers, *Programming), Computer calculations, Data processing, Design, Ibm computers, Images, Memory devices, Operation, Optical systems, Plotters.

For abstract, see NSA 30 05, number 14716.

UIUCDCS-R-74-641 PC$6.75/MF$2.25
Illinois Univ., Urbana Dept. of Computer Science.
SEMI-VIRTUAL MEMORY MULTI-PROGRAMMING SYSTEM FOR THE MINI-COMPUTER PDP 8/3 (ILLIAC-3).
T. W. Wong. May 74, 75p

Descriptors: (*Pdp computers, *Programming), Computer calculations, Data processing, Design, Ibm computers, Images, Memory devices, Operation, Optical systems, Plotters.

For abstract, see NSA 30 05, number 14704.

9C. Electrical and Electronic Engineering

AD-783 565/5GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
SERRATED COMMUTATOR-BRUSH UNIT,
I. I. Tuktaev, M. F. Khlystov, and V. P. Bychkov. 10 Jul 74, 9p Rept no. FTD-HT-23-1155-74
Edited trans. of Izvestiya Vysshikh Uchebnykh Zavedenii. Elektromekhanika (USSR) n2 p245-248 1973, by Victor Mesenzeff.

Descriptors: *Electric motors, Commutators, Brushes, Configurations, Electrical equipment, Wear, Translations, USSR.

Brush-commutator units of electrical machines of low capacity, whose contact surfaces have a serrated form, ensure a decrease in the axial dimensions of commutators by 1.5-2 times using constant current density at the contact. The sparking and wear of brushes do not exceed the established standards.

AD-783 735/4GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
SERIES D ASYNCHRONOUS MOTORS.
16 May 74, 5p Rept no. FSTC-HT-23-888-71
Trans. of unidentified Russian language mono., p2444/1.

Descriptors: *Electric motors, Alternating current, Translations, USSR.
Identifiers: AC motors.

This is an advertisement, with sample specifications, for series D electric motors.

AD-783 930/1GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
HARMONIC COMPONENTS OF THE MAGNETIC CONDUCTIVITY OF THE AIR GAP OF ELECTRIC MOTORS ON A GEAR SURFACE,
I. I. Talalov, and Yu. I. Stradomskii. 17 Jul 74, 17p Rept no. FTD-HT-23-1147-74
Edited trans. of Elektrotekhnika (USSR) n1 p49-52 Jan 73, by Ray E. Zarza.

Descriptors: *Electric motors, Magnetic fields, Surfaces, Conductivity, Computations, Translations, USSR.

An analytical method for determining the field on a gear surface is proposed, taking into account the effect of the distribution of normal components. The results of the calculations are presented in the form of generalized dependences for the amplitude coefficients of the harmonic components of magnetic conductivity.

9D. Information Theory

AD-783 503/6GA PC$9.00/MF$2.25
Johns Hopkins Univ Silver Spring Md Applied Physics Lab
AN ANNOTATED BIBLIOGRAPHY ON WALSH AND WALSH RELATED FUNCTIONS.
Technical memo.,
J. N. Bramhall. May 74, 341p* Rept no. APL-TG-1198B
Contract N00017-72-C-4401

Descriptors: *Walsh functions, *Bibliographies, Signal processing, Information theory, Image processing, Pattern recognition, Data processing, Computer programming, Fourier transformation, Data compression, Multiplexing, Computations, Applied mathematics, Indexes, Abstracts.
Identifiers: Fast Walsh transform, Switching theory, Data transmission.

The continuing rapid increase in the literature on Walsh functions during the year 1973 is reflected in the third edition of this bibliography. The entries in the bibliography are arranged in two formats: the primary citation and the three indices. In the primary citation the entire reference is given for each entry with (where possible) an abstract of the article. These citations are listed alphabetically by author and date. The three indices to the primary citation list are based on category, author/coauthor, and date. The Category Index lists authors under five subject categories, the purpose of which is to insure efficient access to the literature for those whose interest lies in specific aspects of the Walsh functions. The Author Index lists primary authors together with cross referencing for coauthors. Finally, the Date Index provides a chronological listing of publications according to the year of publication. (Author)

AD-783 788/3GA PC$23.50/MF$2.25
Naval Postgraduate School Monterey Calif
CORRELATED NOISE EFFECTS OF STRUCTURE IN DIGITAL FILTERS.
Master's thesis,
Paul E. Girard. Jun 74, 406p

Descriptors: *Signal processing, *Digital filters, Fourier transformation, Transfer functions, Quantization, Analog to digital converters, Correlation techniques, Analysis of variance, Theses, White noise.
Identifiers: Fast Fourier transform, Discrete Fourier transform.

Noise generation caused by quantization of signals in digital filters is considered using matrix state-space techniques. The results are expressed in terms of the correlation of the errors so that the assumptions made about the statistical properties of the noise sources can be evaluated. The effect of correlation, which is shown to be significant, depends upon the specific structure of the filter and the relative location of the error source both topologically and temporally. Specifically, the results are applied to a newly extended set of canonic realizations of second order filters which are presented in the form of canonic arrays of coefficients. (Modified author abstract)

AD-783 813/9GA PC$10.00/MF$2.25
Naval Postgraduate School Monterey Calif
AN INVESTIGATION OF A METHOD FOR OBTAINING A NUMERICAL INDICATOR OF PHASE COHERENCE.
Master's thesis,
Robert Everett Beal. Jun 74, 136p

Descriptors: *Signal processing, *Fourier transformation, Phase control, White noise, Waveforms, Underwater sound, Graphics, Computations, Theses.
Identifiers: *Fast Fourier transform, Signal detection.

The Fast Fourier Transform (FFT) has dramatically changed the signal processing field by allowing the transformation of data from the time domain to the frequency domain at speeds rivaling and in many cases exceeding real time. The output spectrum obtained from the FFT depends on the amplitudes and the phase coherence of the sinusoids that comprise the input waveform. It is the purpose of this investigation to modify the FFT so that it will rely more heavily on the phase coherence of these sinusoids rather than on their amplitude. In this way a second indicator of signal presence or absence would be available to add more reliability to the estimation process. The study proposes a method for reducing the dependence of the output coefficients on input amplitudes and investigates its merits with several types of data. A method of displaying the phase coherence indicators is presented. (Author)

AD-783 949/1GA PC$3.00/MF$2.25
Naval Research Lab Washington D C
THE J-CODE: A MINIMUM-PEAK DISTORTION CODE.
Interim rept.,
W. M. Jewett. 23 Jul 74, 20p Rept no. NRL-7776

Descriptors: *Coding, *Radio transmission, Pulse code modulation, Distortion, Signal to noise ratio.
Identifiers: J codes, Binary codes.

The transmission of a PCM symbol on a slowly fading Rayleigh channel was examined from the standpoint of minimizing peak distortion from transmission errors. An encoding technique was defined for M-ary DPSK (differential phase-shift keying) wherein multiple values were assigned to the guard band so as to cause peak distortion to be a linear function of the phase error. Comparisons were made of the use of a Gray code and the natural binary code, with a guard band evenly divided into two symbols. The newly devised J code resulted in a lower probability of high peak distortion than either of these two encoding techniques. The mean square distortion of the J code for a slowly, fading Rayleigh channel is shown to be lower than that obtained for the natural binary code with a guard band of pi, and at very low signal-to-noise conditions it is better than the natural binary code with an optimum guard band of 0.4pi. (Author)

9E. Subsystems

AD-783 501/0GA PC$5.00/MF$2.25
Massachusetts Inst of Tech Cambridge Francis Bitter National Magnet Lab
WAVE MECHANICAL EFFECTS IN SUPERCONDUCTING MICROCIRCUITS.
Final rept.,
Robert H. Meservey, and Benjamin Lax. 31 Oct 73, 37p
Contract N00014-67-A-0204-0043

Descriptors: *Microcircuits, *Superconductors, Thin films, Integrated circuits, Inductance, Measurement, Aluminum, Metal films.
Identifiers: Superconducting weak links, Ginzburg-Landau theory, SQUID(Superconducting Quantum Interference Devices), Superconducting quantum interference devices.

The research program was to investigate wave-mechanical effects in superconducting thin-film micro-circuits. Solutions of the Ginzburg-Landau equations for a one dimensional weak line were obtained. Techniques were developed to fabricate weak links in which two dimensions could be controlled in the sub-micron region. A superconducting zero frequency inductance bridge was developed which permits the quantum-phase difference across a superconductor to be measured as a function of the current. This bridge was used to measure the kinetic inductance of superconducting Al thin-film meander lines and can measure an inductance of 10 to the minus 7th power H to one part in 1000 to 10,000 with a current of 0.00001 A. With a slight redesign of the input circuit the current quantum-phase relation of superconducting weak links should be measurable with a dc current. (Author)

AD-783 509/3GA PC$4.75/MF$2.25
General Electric Co Syracuse N Y Heavy Military Electronic Systems
3-D LIQUID CRYSTAL DISPLAY FOR MINE DETECTING RADAR.
Final technical rept. Jul 72-Jun 74,
John C. Reiche. Apr 74, 134p
Contract DAAK02-72-C-0521

Descriptors: *Stereoscopic display systems, *Radar equipment, *Screens(Displays), Liquid crystals, Display systems, Mine detectors, Mine detection, Minicomputers.
Identifiers: *Liquid crystal display systems.

The report describes the development of a Liquid Crystal 3-D Display. The display consists of a stack of ten cholesteric-nematic liquid crystal cells. Each cell consists of a matrix of 20 x 40 addressable elements, 0.15 x 0.15 inches per element, with a total active display area of 3 x 6 inches. The modified half select matrix addressing scheme provides for up to four levels of gray scale. Display electronics is designed to accept information formatted by a minicomputer to refresh the display at a 2.5 to 10 hertz rate. Physical and chemical characteristics of the cholesteric nematic liquid crystal are described in detail. (Author)

AD-783 640/6GA Reprint
Air Force Cambridge Research Labs L G Hanscom Field Mass
MULTIPLE-CHANNEL UHF FREQUENCY SYNTHESIZER USING ACOUSTIC SURFACE-WAVE FILTERS,
Alan J. Budreau, Paul H. Carr, and Kenneth R. Laker. 1973, 7p Rept no. AFCRL-TR-74-0337
Availability: Pub. in Proceedings of 1973 IEEE Ultrasonics Symposium, p1-3 Nov 73.

Descriptors: *Frequency synthesizers, Multichannel, Ultrahigh frequency, Acoustic waves, Surface waves, Acoustic filters, Narrowband.
Identifiers: Acoustic surface waves.

A UHF frequency synthesizer consisting of a clock-controlled pulse generator followed by an acoustic surface-wave filter bank has the advantages of order-of-magnitude size and weight reduction together with lower cost as compared with alternative approaches. Development of such an acoustic filter bank covering frequencies in the 520 to 650 MHz band with a channel separation of 5.36 MHz is presented, along with problems in increasing the frequency to the 970 to 1210 MHz by fabrication on AlN-on-sapphire. Techniques for obtaining narrow filter response, and minimizing spurious responses, are discussed. (Author)

AD-783 656/2GA PC$4.00/MF$2.25
Signals Research and Development Establishment Christchurch (England)

A SPHERICAL REFLECTOR ANTENNA FOR COMMUNICATION SATELLITE EARTH STATIONS,
P. H. Masterman. Dec 72, 98p Rept no. SRDE-72031 DRIC-BR-41806

Descriptors: *Antennas, Satellite communications, Ground stations, Reflectors, Antenna feeds, Antenna radiation patterns, Optimization, Great Britain.

An experimental spherical-reflector microwave antenna is described. It has a movable broad-band feed incorporating a concave subreflector, which permits plus or minus 7 degrees beam-steering without loss of gain. Overall efficiency was measured as 50%, but this could be raised to 58% by eliminating reflector distortion. The first sidelobe level was -10.6dB and antenna noise temperature was 30 degrees K. Possible improvements include raising efficiency by allowing some gain variation on scanning. Optimum design then depends on system noise temperature and scanning requirements, but it is concluded that up to 75% on-axis efficiency is obtainable. Loss in gain at 7 degrees scan is typically 0.3dB.

AD-783 897/2GA PC$5.50/MF$2.25
Atlantic Research Corp Alexandria Va Advanced Programs Group
METHODS OF MOMENTS APPLICATIONS. VOLUME V. THIN WIRE ANTENNA ANALYSIS COMPUTER CODES COMPARED WITH MEASURED DATA.
Final rept. Feb 73-Mar 74,
Thomas E. Baldwin, Jr., and Richard Robertson.
Jul 74, 179p RADC-TR-73-217-Vol-5
Contract F30602-73-C-0131
See also Volume 4, AD-773 173.

Descriptors: *Dipole antennas, Near field, Matrices(Mathematics), Currents, Admittance, Computer programming, Loop antennas.
Identifiers: Method of moments.

The method of moments is applied to various wire antenna problems for the purpose of investigating the following trade-offs: (1) accuracy of current distributions on the structure, (2) general applicability of several expansion functions to a variety of geometries, (3) computer storage requirements, and (4) computer central processor time (CPU). Three computer programs designed to treat radiation and scattering problems for thin-wire structures by the method of moments were compared extensively with each other and with experimental data. Each of these three programs are available in the literature and represent a variety of different techniques such as pulse, triangle, and sinusoidal expansion functions, respectively, to determine current distributions. (Author)

AD-783 953/3GA PC$3.00/MF$2.25
Naval Ammunition Depot Crane Ind
EVALUATION OF THE THERMAL CHARACTERISTICS OF THE AN/WQC-2 FINAL AMPLIFIER,
Jack R. Penrod. 1974, 22p NAD-CR-TR-7022/C74/1

Descriptors: *Transistor amplifiers, Underwater communications, Sonar, Thermal properties, Reliability(Electronics), Failure(Electronics).
Identifiers: AN/WQC-2.

An investigation was made of the thermal breakdown of eight AN/WQC-2 final amplifier transistors. After extensive investigation, it was found that the AN/WQC-2 system is safeguarded against final amplifier transistor failure due to overheating by a thermal interlock switch (3A4S1) mounted, essentially, on one of the final amplifier transistors (3A4Q17). In the event of a blower (3A4B1) failure the final amplifier would be protected, unless, either final amplifier transistor, 3A4Q17, or thermal interlock 3A4S1, was inoperative, then the thermal protection circuit would be defeated and thermal breakdowns imminent. Another possible final amplifier failure mode is direct overloading of the amplifier by too great of an Auxiliary 2 mode drive level, which would always lead to transistor failures. (Modified author abstract)

AD-918 369/0GA PC$4.25/MF$2.25
Texas Instruments, Inc., Dallas.
SUBMINIATURE BROADBAND FILTERS.
Interim Technical rept. no. 3, 1 May-30 Nov 73,
Ronald C. Rosenfeld, and Clinton S. Hartmann.
Feb 74, 22p TI-08-73-68 ECOM-0326-3-72
Contract DAAB07-72-C-0326
Distribution Limitation now Removed.

Descriptors: *Acoustic filters, Surface waves, *Band pass filters, Directional, *Electroacoustic transducers, Anisotropy, Phased arrays, Subminiature electronic equipment, Insertion loss, Impedance matching, Capacitance, Electrodes, Phase(Electronics), Broadband, Very high frequency.
Identifiers: Weighting, Three phase systems, Acoustic surface waves.

The third period of this program witnessed two major developments in acoustic surface-wave devices. A surface wave filter with only 3-DB total insertion loss, including matching losses, and 0.05-DB passband ripple was demonstrated with unidirectional transducers developed in the first part of this contract. The 3-DB value is the lowest insertion loss wver reported for a multiphase unidirectional filter, and tests indicate that the loss can be reduced even further. The second development is the invention of the capacitively weighted transducers (CWT), a new technique for weighting surface-wave transducers, in the CWT, the charges on the electrodes and therefore the excitation strength of the electrodes, are controlled by thin-film weighting capacitors connected in series with the electrodes. (Modified author abstract)

BDX-613-1109 PC$4.00/MF$2.25
Bendix Corp., Kansas City, Mo.
CHARACTERIZATION OF A CHROMIUM--GOLD DEPOSITION PROCESS FOR THE PRODUCTION OF THIN FILM HYBRID MICROCIRCUITS.
F. A. Clay, and R. W. Pierce. May 74, 19p CONF-740503-2
Contract AT(29-1)-613

Descriptors: (*Chromium, *Deposition), (*Gold, Deposition), (*Microelectronic circuits, *Fabrication), Electric conductivity, Electrical properties, Electron beams, Evaporation, Films, Thickness.

For abstract, see NSA 30 04, number 12170.

IFTJ-45 PC$5.00/MF$2.25
Institute of Nuclear Physics and Techniques, Krakow (Poland).
ANALOG FUNCTION MODULES.
K. Korbel, and E. Lacki. 1973, 36p
U.S. Sales Only.

Descriptors: Analog systems, Electronic circuits, Operation.

For abstract, see NSA 30 05, number 12813.

PATENT-3 718 932 Not available NTIS
Department of the Army Washington D C
COMBINED MULTI-POLARIZATION LOOPSTICK AND WHIP ANTENNA.
Patent,
Kurt Ikrath, and Morris Acker. Filed 1 Jun 71, patented 27 Feb 73, 6p Rept nos. PAT-APPL-148 755,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Antennas, *Patents, Radio reception, Polarization, Attenuation, Signals, Ferrites, Omnidirectional antennas.
Identifiers: PAT-CL-343-728.

The patent describes a receiving antenna assembly for mitigating signal fading and cancellation caused by the degrading effects of multipaths and scatter in jungle, mountain or urban environments. The antenna has three mutually-perpendicular, multi-polarization ferrite loopsticks for sensing H field signal energy and a whip antenna for sensing E field signal energy, and selection means for choosing among the signal energies sensed by the ferrite loopsticks and the whip antenna.

PATENT-3 777 176 Not available NTIS
Atomic Energy Commission, Washington, D.C.
ACTIVE CROWBAR FOR A SWITCHING MAGNET.
Patent,
Walter F. Praeg. Filed 5 Jul 72, patented 4 Dec 73, 8p PAT-APPL-269 004
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Switching circuits, *Patents, Load control, Silicon controlled rectifiers, Electromagnets.
Identifiers: PAT-CL-307-108.

The patent describes a first electrical source connected to an electromagnet by silicon-controlled rectifiers (SCR's) to produce a rapid rise in current in the load. A second electrical source is then connected by SCR's to the load and the first is disconnected to produce a constant current in the load. A connection is then established to discharge the stored energy from the electromagnet, producing a rapid drop in current, and the second source is disconnected. The stored energy may be returned to the first electrical source.

9F. Telemetry

AD-783 618/2GA PC$3.75/MF$2.25
Northeastern Univ Boston Mass Electronics Research Lab
TELEMETRY, RANGING AND INSTRUMENTATION SYSTEMS FOR SPACE VEHICLES.
Final rept. 1 Apr 71-31 Mar 74,
J. Spencer Rochefort, Lawrence J. O'Connor, Norman C. Poirier, and Robert E. Russell. 30 Apr 74, 74p AFCRL-TR-74-0286
Contract F19628-71-C-0030

Descriptors: *Ionosphere, *Telemeter systems, *Atmospheric sounding, Instrumentation, Sounding rockets, Range finding, Meteorological balloons, Electromagnetic interference, Scientific satellites.
Identifiers: Ice cap operation, S-3 satellite, Tone ranging.

The report summarizes the work carried under programs concerned with telemetry system studies, rocket and balloon instrumentation systems, tone-ranging system performance, evaluation of commercial telemetry system components, EMI testing of satellite components and field support of certain sounding rockets and balloons. Computer programs were developed to analyze performance of FDM/FM systems as well as commutator segment assignment. Effort in support of ICE CAP programs produced an inflight calibrator, a first motion switch, a tone-ranging system evaluation, and field support. The balloon support effort produced a special commutator/decommutator and an evaluation of subcarrier taper. A listing, only, is given of the various commercial telemetry components tested since detailed results are published in scientific reports which are available to authorized agencies. EMI testing procedures are developed for the S3 small satellite program. Finally, a tabulation is given of the field support rendered in connection with the various programs. (Author)

10. ENERGY CONVERSION (NON-PROPULSIVE)

10A. Conversion Techniques

ORNL-EIS-74-52(Vol.2)(No.4) PC$5.25/MF$2.25
Oak Ridge National Lab., Tenn.
NSF-RANN ENERGY ABSTRACTS. A MONTHLY ABSTRACT JOURNAL OF ENERGY RESEARCH.
M. P. Guthrie. Apr 74, 42p
Contract W-7405-eng-26

Descriptors: (*Energy, *Bibliographies), Energy conservation, Energy consumption, Energy policy, Energy reserves, Energy shortages, Energy source conservation, Energy sources.

For abstract, see NSA 30 04, number 12059.

10B. Power Sources

AD-783 490/6GA PC$3.00/MF$2.25
Army Electronics Command Fort Monmouth N J
SEALED ZINC-OXYGEN CELLS.
Technical rept.,
Otto C. Wagner. Aug 74, 12p Rept no. ECOM-74-4235

Descriptors: *Storage batteries, *Zinc, *Anodes, Oxygen, Reliability(Electronics).
Identifiers: Zinc oxygen cells.

Sealed zinc-oxygen cells attained 100 cycles with a 15-25% reduction in capacity. Several basic approaches were taken to reduce the rate of zinc shape change, which is the major failure mode of the zinc-oxygen system. Little success was attained by these approaches. Several basic approaches are suggested for resolving the zinc shape change problem in future zinc-oxygen cell designs. (Author)

AD-783 528/3GA PC$3.00/MF$2.25
Naval Ship Research and Development Center Annapolis Md
AN EVALUATION OF PLATINUM AND PALLADIUM ANODES FOR HYDRAZINE FUEL CELLS,
H. B. Urbach, and D. E. Icenhower. Jul 74, 18p
Rept nos. NSRDC-4409, NSRDC-27-772

Descriptors: *Fuel cells, *Anodes, *Catalysts, Palladium, Platinum, Hydrogen, Performance(Engineering).
Identifiers: *Hydrazine oxygen fuel cells.

An experimental evaluation of the performance of platinum and palladium hydrazine anodes in a working fuel cell was performed. The results show that rapid decreases in the hydrogen evolution rate occur within the first several hundred hours on platinum. It finally approximates the evolution rate on palladium where the hydrogen evolution reaction appears to be stable with time. During the first 30 hours of operation of the cells, the power efficiency on platinum appears to be much lower than the power efficiency of palladium, due to its higher rate of hydrogen loss. It is concluded that palladium is the preferred hydrazine anode catalyst. (Modified author abstract)

AD-783 764/4GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
STANDARDIZED WIND ELECTRIC POWER UNIT,
V. Fedotov, and V. P. Kharitonov. 9 May 74, 6p
Rept no. FSTC-HT-23-1824-73
Trans. of Mekhanizatiya i Elektrifikatsiya (sic) n7 p43-44 1971.

Descriptors: *Electric power plants, Wind machines, Electric generators, Reduction gears, Control, Electric power, Automation, Translations, USSR.
Identifiers: Wind power generation.

The standardized UVEU- (1-4) - 6 wind electric power unit is discussed. The unit is suitable for operation at small sites which are distant from power networks and do not have a high power demand. Output and engineering characteristics of the unit are given.

AD-783 824/6GA PC$7.25/MF$2.25
Avco Everett Research Lab Inc Everett Mass
STATUS REPORT OF THE DESIGN STUDY ANALYSIS AND THE DESIGN OF A 10 MW COMPACT MHD GENERATOR SYSTEM.
Interim technical rept. no. 2, Part 2,
O. K. Sonju, J. Teno, R. Kessler, L. Lontai, and D. Meader. Jun 74, 313p* AFAPL-TR-74-47-Pt-2
Contract F33615-71-C-1456
Report on VIKING II Program. See also AD-783 267. Sponsored in part by Advanced Research Projects Agency, Arlington, Va.

Descriptors: *Magnetohydrodynamic generators, *Electric power production, Combustion chambers, Fuel systems, Nozzles, Magnets, Control systems, Cooling.
Identifiers: Viking 2 program, Design.

The Second Interim Report - Part 2 presents the results of a design analysis and design of a very compact high performance, 10 MW MHD generator system. The basis for this work has been firmly established by past MHD research and development programs including the most recent MHD Research and Development work reported in this Second Interim Report - Part I. The system being designed has a target dry weight for the total system of 1800 to 2200 kg. The design analysis and a study of fabrication techniques have led to novel designs for the components of the 10 MW MHD generator system which are reviewed in detail in the report. (Author)

AD-783 832/9GA PC$7.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
ELECTROTECHNICAL HANDBOOK (EXTRACT),
Sep 73, 76p Rept no. FSTC-HT-23-76-74
Trans. of mono. Elektrotekhnicheskii Spravochnik, Moscow, 1971 v1 bk2 4ed rev., p752-767, 811-832, by Peabody.

Descriptors: *Electric power plants, *Electric batteries, Mobile, Handbooks, Primary batteries, Storage batteries, Translations, USSR.

The report covers mobile power stations and electric batteries.

AD-783 901/2GA PC$5.00/MF$2.25
Advanced Kinetics Inc Costa Mesa Calif
CHEMICAL TO ELECTROMAGNETIC ENERGY CONVERSION TECHNIQUES.
Final rept. May 72-Mar 74,
Ralph W. Waniek. Jun 74, 157p RADC-TR-74-154
Contract F30602-72-C-0401

Descriptors: *Energy conversion, *Pulse generators, Magnetic fields, Exothermic reactions, Detonation waves, Pistons, Compression, Explosives, Flux(Rate), Interactions, Projectiles, Magnets, Electromagnetic pulses, Acceleration, Deceleration, Multiple operation.

The objective of the work was to develop techniques for conversion of the very high density energy stored chemically to pulses of electrical energy. Reliable low cost single shot convertors have been demonstrated by investigators in explosive flux compression technology. The techniques investigated are for use in high power lightweight transmitter experiments in support of TP05. Multiple shot magnetic flux compression concepts were analyzed, experimentally verified, and categorized as to potential device use. The concepts investigated have the capability for multiple pulse operation and all involved the rapid deceleration of either explosively driven shock fronts or explosively driven metallic projectiles in a magnetic field. The effects of physical parameters of the decelerated medium and the magnetic field were experimentally verified and parameter tradeoffs were developed.

AD-783 939/2GA PC$4.75/MF$2.25
Naval Air Development Center Warminster Pa Air Vehicle Technology Dept.
EVALUATION OF THE NOISE CHARACTERISTICS OF THE NC-8A MOBILE ELECTRIC POWER PLANT.
Final rept.,
W. C. Hallow, and F. T. Perry. 8 Aug 74, 34p Rept no. NADC-74073-30

Descriptors: *Electric power plants, *Noise reduction, Mobile, Electric power, Diesel engines, Human factors engineering, Electric generators.

An investigation was conducted to determine the needed corrective measures to be pursued to reduce the operating noise levels of NC-8A. It is concluded that several effective measures are possible for noise reduction. (Author)

AERE-R-7693 PC$4.00/MF$2.25
UKAEA Research Group, Harwell. Atomic Energy Research Establishment.
FATIGUE CHARACTERISTICS OF THE FLEXING MEMBERS OF THE HARWELL THERMOMECHANICAL GENERATOR.
E. H. Cooke-Yarborough. Mar 74, 9p
U.S. Sales Only.

Descriptors: (*Electric generators, *Testing), Electric power, Fatigue, Flexural strength, Mechanical properties, Mechanical structures, Power generation, Stresses, Thermal fatigue.

For abstract, see NSA 30 04, number 12169.

JUL-984-TP PC$6.25/MF$2.25
Kernforschungsanlage Juelich G.m.b.H. (F.R. Germany). Inst. fuer Technische Physik.
DESIGN OF A MHD SADDLE MAGNET FOR THE PROJECT VEGAS II.
G. Kolb, and P. Komarek. Jul 73, 65p
In German. U.S. Sales Only.

Descriptors: (*Open-cycle mhd generators, Superconducting magnets), (*Superconducting magnets, *Design).

For abstract, see NSA 30 04, number 09413.

PB-234 188/1GA PC$7.50/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Research and Development Center.
CLEAN POWER GENERATION FROM COAL.
Final rept. 30 Jun 72-23 Jan 73.
Apr 74, 337p OCR-84
Contract DI-14-32-0001-1223
Paper copy also available from GPO $3.30.

Descriptors: *Electric power generation, *Coal, Steam electric power generation, Hydrogen, Air pollution, Electric power plants, Gas turbine power generation, Combustion products, Particles, Solid electrolytes, Electric power transmission, Gas generators, Coal gasification, Corrosion, Fouling, Gas turbines, Fuel cells, Design, Performance, Plant layout, Electric power demand, Cost estimates, Forecasting, Cooling towers, Computer programs, Fluidized bed processing, Electrochemical power generation, Fuel cell electrodes, Process charting, Erosion corrosion.
Identifiers: Air pollution control, Air pollution abatement.

The Westinghouse Electric Corporation, through its Research Laboratories, entered into a three-year research and development contract on clean power generation from coal. Prior to the cancellation of the contract some six months after its award, significant progress had been made on several tasks. Task titles researched include: Identification of the most promising power plant concepts using coal; Fuel cell battery development; Turbine development study; Particulate removal studies from high temperature, high-pressure gases; Development of a low-cost solid electrolyte hydrogen production process. Appendices discuss progress on determination of 1990 environmental conditions of power plants, electric utility steam coal prices, 1970 to 1985, regional forecast of electric utility industry generation requirements to 1985, forecast of electric utility industry generation requirements to 1990 (Part II. generation), and subroutine for induced or natural draft cooling tower performance, cooling tower cost, and SO2 stack gas scrubbing equipment plus related subroutines.

PB-234 371/3GA PC$3.25/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Research and Development Center.
MHD SYSTEM WITH DUAL PRESSURE MELT GASIFICATION AND CO2 RECYCLE.
Final rept. Jul 69-Feb 70.
Jul 70, 47p OCR-58
Contract DI-14-01-0001-1199
Paper copy also available from GPO $0.55.

Descriptors: *Magnetohydrodynamic generators, *Coal, *Combustion, Air pollution control equipment, Carbon dioxide, Scrubbes, Combustion, Design, Liquid metals, Lead, Cost estimates, Thermodynamics, Endothermic reactions, Boilers, Potassium sulfates, Cesium inorganic compounds.
Identifiers: Waste recycling, Seeding, Chars.

This report describes a possible method of generating cheaper power from coal with almost no air pollution. The process involves the principle of magnetohydrodynamics (MHD), an advanced system of electrical energy generation. The study covers a preliminary analysis of a conceptual coal-fired MHD power cycle involving a novel coal gasifier and recycle of carbon dioxide from the stack gas. No practical development work on the system has yet been done, but indications are that the system, or some variations of it, may have the potential of being useful in the development of lower cost more efficient power systems in the future.

PB-234 395/2GA PC$3.75/MF$2.25
Tennessee Univ. Space Inst., Tullahoma.
MAGNETOHYDRODYNAMIC POWER GENERATION WITH THE COMBUSTION PRODUCTS OF CHAR.
Interim rept. no. 1, Feb-Jul 71,
J. B. Dicks, L. W. Crawford, Y. C. L. Wu, J. W. Muehlhauser, and R. W. Crowl. 11 Jul 71, 71p
OCR-65-INT-1
Contract DI-14-32-0001-1213
Paper copy also available from GPO $0.75 as stock number 2414-0038, I63.10:63.10:65/INT-1.

Descriptors: *Magnetohydrodynamic generators, *Combustion, *Coal, Injectors, Instrumentation, Ionized gases, Potassium sulfates, Combustion products, Electrocal resistivity.
Identifiers: *Chars.

This evaluation report represents a preliminary study of char combustion, electrical conductivity, and power generation characteristics of combustion gases. It shows the efficiency of using finely pulverized char and finely powdered seed to obtain good combustion efficiency, gas conductivity, and power generation characteristics for MHD power generation. It concludes that combustion and conductivity of powdered char is satisfactory for MHD power generation and recommends a program of complete studies to establish the feasibility of the system. This approach will be studied as part of a national MHD power generation research program to be funded by the Government and industry.

11. MATERIALS

11A. Adhesives and Seals

RD/B/N-2734 PC$5.25/MF$2.25
Central Electricity Generating Board, Berkeley (UK). Berkeley Nuclear Labs.
GAS LEAKAGE FROM STATIC SEALS.
T. C. Chivers, and M. E. Williams. Nov 73, 44p
U.S. Sales Only.

Descriptors: (*Seals, *Leaks), Carbon dioxide, Flanges, Gas flow, Helium, Laminar flow, Leak testing.

For abstract, see NSA 30 04, number 09425.

UCID-16463 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
PROPERTIES OF POSSIBLE ADIPRENE/MOCA REPLACEMENT MATERIALS.
L. E. Peck, and L. P. Althouse. 28 Mar 74, 20p
Contract W-7405-eng-48

Descriptors: (*Adhesives, *Chemical properties), Physical properties, Toxicity.

For abstract, see NSA 30 04, number 12103.

11B. Ceramics, Refractories, and Glasses

AD-783 506/9GA PC$4.00/MF$2.25
Westinghouse Research Labs Pittsburgh Pa Metallurgy and Metals Processing Dept
EFFECT OF SELECTED IMPURITIES ON THE HIGH TEMPERATURE MECHANICAL PROPERTIES OF HOT-PRESSED SILICON NITRIDE.
Final rept.,
J. L. Iskoe, and F. F. Lange. 5 Apr 74, 17p Rept no. 74-9D4-KERAM-R2
Contract N00014-68-C-0323

Descriptors: *Silicon nitrides, High temperature, Mechanical properties, Impurities, Calcium oxides, Alumina, Iron oxides, Lithium compounds, Sodium compounds, Carbonates.
Identifiers: Sodium carbonates, Lithium carbonates.

Additions of CaO to high purity beta-Si3N4, which was hot-pressed to full density with the aid of MgO, was found to significantly influence the high temperature mechanical properties. Other impurity additions, viz., Al2O3, Fe2O3, Li2CO3 and Na2CO3, had no effect. (Author)

AD-783 680/2GA PC$3.00/MF$2.25
Hawaii Inst of Geophysics Honolulu
EFFECTS OF COMPOSITION, PRESSURE, AND TEMPERATURE ON THE ELASTIC, THERMAL, AND ULTRASONIC ATTENUATION PROPERTIES OF SODIUM SILICATE GLASSES.
Technical rept.,
Murli H. Manghnani. Jul 74, 16p Rept nos. HIG-Contrib-598, TR-5
Contract N00014-67-A-0387-0012
Pub. in the Proceedings of the International Congress on Glass (10th), held in Kyoto, 8-12 Jul 74.

Descriptors: *Glass, *Elastic properties, *Thermal properties, *Ultrasonic tests, Acoustic attenuation, Composition(Property), Temperature, Pressure.

Elastic moduli of sodium silicate glasses have been measured by ultrasonic interferometry to 5 kbar (at 298K) and in the temperature range 80 to 498K. The values of pressure and temperature derivatives of the moduli become systematically less anomalous (i.e., more positive and more negative, respectively) with increasing Na2O content. Similarly, the mode Gruneisen parameters derived from the pressure dependence of elastic wave velocities, and the thermal Gruneisen parameters calculated from thermal expansivity data increase with increasing Na2O content. At low temperatures, the attenuation-temperature curves for these glasses show reversals. The attenuation peak at approximately 47K, found in fused silica, shifts to a higher temperature in these glasses as the Na2O is increased. Implications are discussed in terms of a network model. (Modified author abstract)

CEA-R-4573 PC$9.00/MF$2.25
CEA Centre d'Etudes Nucleaires de Fontenay-aux-Roses, 92 (France).
THERMODYNAMIC STUDY OF PLUTONIUM CARBONITRIDES AT HIGH TEMPERATURES.
M. de Franco. Apr 74, 120p
In French. U.S. Sales Only.

Descriptors: (*Plutonium carbides, *Phase diagrams), (*Plutonium nitrides, Phase diagrams), Equilibrium, Pressure dependence, Solubility, Statistical models, Thermodynamic properties.

For abstract, see NSA 30 04, number 10219.

COM-74-50723/7GA Not available NTIS
National Bureau of Standards, Washington, D.C.
PLASTIC DEFORMATION IN FINE-GRAIN CERAMICS.
Final rept.,
A. H. Heuer, R. M. Cannon, and N. J. Tighe. 1970, 27p
Pub. in Proceedings of the Sagamore Army Materials Research Conference (15th), Sagamore Conference Center, Raquette Lake, N.Y., 20-23 Aug 68, ch16 in Ultrafine-Grain Ceramics, p339-365 1970.

Descriptors: *Ceramic materials, *Plastic deformation, *Grain size, Grain boundaries, Diffusion, Temperature, Aluminum oxide.

Plastic deformation in fine-grain (i.e., = or < 10 micrometers) ceramics is discussed. It is shown that fine-grain polycrystals can be exceptionally ductile, the fine grain size enhancing diffusional deformation and grain boundary sliding processes. The deformation is sensitive to both grain size and temperature. The influence of grain size, strain-rate, and temperature on the deformation of fine-grain alumina was studied. A brief review of the literature on plastic deformation in fine-grain magnesia, beryllia, thoria, and urania indicates that grain boundary sliding may be important for each of these materials.

KFK-EXT-6-74-1 PC$4.75/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Material- und Festkoerperforschung.
IRRADIATION BEHAVIOR OF URANIUM NITRIDE.
H. Zimmermann, and W. Dienst. Feb 74, 34p
In German. U.S. Sales Only.

Descriptors: (*Uranium nitrides, *Physical radiation effects), Alloy-tzm, Burnup, Capsules, Density, Fission products, Fr-2 reactor, Fuel cans, Fuel pellets, Gases, Thermocouples, Very high temperature.

For abstract, see NSA 30 04, number 10222.

SLA-74-69 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.

NONDESTRUCTIVE TESTING FOR MECHANICAL DEFECTS IN ATJ-S GRAPHITE.
J. H. Gieske, B. L. Butler, T. R. Guess, J. M. Freedman, and R. H. Marion. May 74, 15p
Contract AT(29-1)-789

Descriptors: (*Graphite, *Ultrasonic testing), (*X-ray radiography, Graphite), Comparative evaluations, Defects, Mechanical properties.

For abstract, see NSA 30 04, number 09445.

11C. Coating, Colorants, and Finishes

AD-783 552/3GA PC$4.50/MF$2.25
Florida Atlantic Univ Boca Raton
INVESTIGATION OF COMPOSITE COATING SYSTEMS FOR RAIN-EROSION PROTECTION.
Rept. for 15 Jul 73-15 Jul 74,
Olive G. Engel, and Toyoki Nakamura. 15 Jul 74, 104p
Contract N00019-74-C-0063

Descriptors: *Protective coatings, *Radomes, Coatings, Erosion resistance, Rain erosion, Plastic coatings, Polyurethane resins.

The research described in this report is directed primarily to the high speed rain-erosion resistance of protective radome coatings. A further study was made of single-layer and two layer composite coatings of polyurethane. It was found that the rain-erosion resistance of both these coatings types is strongly reduced by outdoor weathering in Florida for ten weeks. Both of these types of coating are strongly subject to sand erosion when sand impacts occur at normal incidence against flat test specimens. A multilayer composite coating has rain-erosion resistance equal or superior to that of a two-layer composite coating. A single-layer polyurethane softcoat may or may not have rain-erosion resistance comparable to that of a two-layer composite coating depending on the quality of the single-layer softcoat. Use of a two-layer composite coating may result in a more stable and predictable average rotating-arm lifetime than use of a single-layer coating. (Modified author abstract)

AD-783 564/8GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
FEATURES OF THE PROCESS OF ONE- AND TWO-COMPONENT SURFACE ALLOYING OF ALLOY ZHS6-K FROM SUSPENSIONS,
G. V. Zemskov, R. L. Kogan, and V. I. Moroz. 27 Jun 74, 15p Rept no. FTD-MT-24-1342-74
Edited machine trans. of Zashchitnye Pokrytiya na Metallakh (USSR) n6 p109-102 1972, by Robert Allen Potts.

Descriptors: *Diffusion coatings, Diffusion coating, Steel, Aluminum, Silicon, Boron, Chromium, Zirconium, Translations, USSR.

The work investigates the features of the process of saturation of alloy ZhS6-K by aluminum, silicon, boron, chromium, zirconium, and also aluminum together with the other indicated elements. Saturation was accomplished by the deposition of suspension, consisting of dispersed particles of the saturating elements and solution of nitrocellulose (colloxylin), on the surface of the sample after the homogenizing of samples in a protective atmosphere (argon, vacuum).

AD-783 566/3GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
COATINGS FOR PROTECTING METALS UNDER HIGH-TEMPERATURE HEATING AND DEFORMATION,
S. S. Solntsev, V. A. Rozenenkova, G. V. Barytsnikova, and A. T. Tumanov. 1 Jul 74, 18p Rept no. FTD-HT-23-1306-74
Edited trans. of mono. Trudy v Vsesoyuznogo Soveshchaniya po Zharostoikim Pokrytiyam, n.p., 1972 p213-223, by Marilyn Olaechea.

Descriptors: *Protective coatings, *Hot working, Metals, Steel, Alloys, Translations, USSR.

AD-783 567/1GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
HIGH-TEMPERATURE COATINGS ON GRAPHITE,
V. S. Dergunova, A. V. Emyashev, G. A. Kravetskii, and V. N. Sushin. 27 Jun 74, 14p Rept no. FTD-HT-23-1302-74
Edited trans. of mono. Trudy v Vsesoyuznogo Soveshchaniya po Zharostoikim Pokrytiyam, n.p., 1972 p112-120, by Victor Mesenzeff.

Descriptors: *Graphite, *Coatings, High temperature, Aluminum, Alumina, Zirconium oxides, Silicides, Boron compounds, Oxides, Molybdenum, Translations, USSR.
Identifiers: Boron silicides.

This work studies the deposition of protective coatings on graphite substrates, designated for parts which operate under various conditions. Depending on the requirements imposed on a particular product, the authors study protective coatings which were obtained by precipitation from a vapor-gas phase, surfacing, plasma deposition. Some coatings described are ZrO2, Al-Al2O3, B-Si, Al2O3-Si, Al2O3-Mo, and oxide mixtures.

AD-783 923/6GA PC$3.25/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
PROTECTIVE COATINGS FROM REFRACTORY COMPOUNDS ON METALS AND GRAPHITE,
G. V. Samsomov, A. L. Burykina, and A. P. Epik. 17 Jul 74, 46p Rept no. FTD-MT-24-1341-74
Edited machine trans. of Zashchitnye Pokrytiya na Metallakh (USSR) n6 p5-24 1972, by Victor Mesenzeff.

Descriptors: *Coatings, *Graphite, *Refractory metals, Diffusion coating, Borides, Carbides, Silicides, Nitrides, Detonations, Plasmas(Physics), Refractory materials, Translations, USSR.

There are different methods for the deposition of protective coatings made from refractory compounds on metals and nonmetallic materials. Coatings are applied from the liquid, solid or vapor phases; combined methods of deposition are used. The selection of a method is determined by the nature of the coating material and substrate, by the purpose for which the coating is designed and by the conditions of its operation. The Laboratory of Coatings of the Institute of Problems of the Study of Materials AS USSR in the course of the last ten years has been developing the technology. Boride, carbide, nitride and silicide diffusion coatings are described. Plasma and detonation methods are also discussed.

PATENT-3 781 173 Not available NTIS
Atomic Energy Commission, Washington, D.C.
METHOD FOR PROVIDING METALLIC CARBIDE COATINGS ON GRAPHITE.
Patent,
John M. Napier, and Anthony J. Caputo. Filed 12 Jan 71, patented 25 Dec 73, 4p PAT-APPL-116 703
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C.

Descriptors: *Graphite, *Coating processes, *Carbides, *Patents, Zirconium carbides, Niobium carbides, Vapor deposition, Nuclear fuel assemblies.
Identifiers: PAT-CL-117-95.

The invention relates generally to an improved method of coating graphite with a metallic or nonmetallic carbide by vapor deposition, and more particularly to providing bores within a graphite substrate with a metallic carbide coating of substantially uniform thickness. Graphite is particularly suitable for use as a nuclear reactor fuel matrix material. However, graphite reacts very vigorously with hot hydrogen gas so as to present a serious drawback when attempting to use graphite as the fuel matrix material for nuclear rocket reactors since the hot hydrogen used as the propellant is heated as it passes through long bores or passageways in the fuel element. In order to overcome this drawback graphite surfaces exposed to the hot hydrogen are clad or coated with a protective carbide coating which effectively inhibits or reduces the hydrogen attack.

SLL-74-5213 PC$7.25/MF$2.25
Sandia Labs., Albuquerque, N.Mex.; Sandia Labs., Livermore, Calif.
PROTECTIVE COATINGS FOR URANIUM ALLOYS.
L. J. Weirick. Apr 74, 85p CONF-740205-11
Contract AT(29-1)-789

Descriptors: (*Uranium alloys, *Protective coatings), Corrosion resistance, Plating, Reviews, Stress corrosion, Uranium, Uranium base alloys.

For abstract, see NSA 30 04, number 10273.

11D. Composite Materials

AD-783 504/4GA PC$5.25/MF$2.25
Virginia Polytechnic Inst and State Univ Blacksburg Dept of Engineering Science and Mechanics
THREE-DIMENSIONAL ANALYSIS FOR THE STRESS DISTRIBUTION NEAR CIRCULAR HOLES IN LAMINATED COMPOSITES.
Interim rept.,
Jon R. Dana, and Richard M. Barker. Aug 74, 42p Rept no. VPI-E-74-18
Contract DAAF07-69-C-0444

Descriptors: *Laminates, *Composite materials, *Stress concentration, Stresses, Holes(Openings), Boron, Epoxy resins, Numerical analysis, Three dimensional.
Identifiers: Finite element analysis, Boron reinforced plastics, Epoxy matrix composites.

A three-dimensional finite-element solution for the state of stress in a laminated composite with a circular hole, loaded in axial extension, is presented. Each layer of the laminate is assumed to be homogeneous and to have orthotropic properties. A curved isoparametric element with 24 nodal points and 72 degrees-of-freedom is used to model the individual layers of the laminate. The nodal displacements are determined by minimizing the total potential energy of the system at the element level with a conjugate gradient iterative method. Three symmetric stacking sequences ((0/90) sub s, (90/0) sub s and (-45/+45) sub s) are investigated for both thick and thin boron-epoxy laminates. The results presented include interlaminar stresses in the vicinity of a circular hole in the laminate. (Modified author abstract)

AD-783 579/6GA PC$3.25/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
STATIC TESTING OF REINFORCED PLASTICS: A REFERENCE MANUAL (INTRODUCTION AND CHAPTER VI).
28 Jun 74, 28p Rept no. FTD-MT-24-1351-74
Edited machine trans. of mono. Metody Staticheskikh Ispytanii Armirovannykh Plastikov. Spravochnoe Posobie, n.p., 1972 p7-8, 191-208, by Robert Allen Potts.

Descriptors: *Reinforced plastics, *Fiber reinforced composites, Manuals, Static tests, Translations, USSR.

AD-783 645/5GA PC$3.00/MF$2.25
Aerospace Corp El Segundo Calif Lab Operations
THE EFFECTS OF THERMAL CYCLING ON THE STRENGTH OF ALUMINUM-GRAPHITE COMPOSITES.
Interim rept.,
William C. Harrigan, Jr. 31 Jul 74, 21p Rept no. TR-0075(9250-03)-1 SAMSO-TR-74-159
Contract F04701-74-C-0075

Descriptors: *Fiber reinforced composites, *Aluminum alloys, *Carbon fibers, *Thermal cycling tests, Thermal fatigue, Tensile properties, High temperature.
Identifiers: Aluminum matrix composites, Graphite reinforced composites, Aluminum alloy 6061.

Room temperature tensile tests were conducted on specimens of 6061 aluminum-Thornel 50 graphite composite after thermal exposure for up to 3000 hours at 465C and thermal cycling between room temperature and 485C or 400C for up to 5000 cycles. These tests demonstrate that the ultimate strength of the composite is not affected by thermal exposure at 465C for 3000 hours or by thermal cycling between room temperature and 400C for 5000 cycles. The tensile modulus is also unaffected by exposure at 465C or cycling to 400C. Cycling between room temperature and 485C for 5000 cycles causes a 9% decrease in the strength with no decrease in modulus. (Author)

AD-783 696/8GA PC$4.75/MF$2.25
Royal Aircraft Establishment Farnborough (England)
HOLOGRAPHIC INTERFEROMETRY OF CFRP HONEYCOMB PANELS.
Technical rept.,
Monica J. Marchant. Mar 74, 34p Rept no. RAE-TR-73192 DRIC-BR-30049

Descriptors: *Holography, *Nondestructive testing, *Panels, Lasers, Interferometry, Honeycomb structures, Carbon fibers, Reinforced plastics, Composite materials, Bonding, Great Britain.
Identifiers: Carbon fiber reinforced plastics, Honeycomb panels, Interferometric holography.

The report describes an investigation into the use of holographic interferometry for the location of areas of faulty bonding in honeycomb sandwich panels with carbon-fibre-reinforced plastic skins. It was found that such faults could be reliable detected by a live fringe technique; characteristic ring patterns corresponding to faults were readily produced by small temperature changes, and were quite distinct from fringes caused by whole-body movement. Current work indicates that the method could be applied to actual structures, although faults are more difficult to identify against complicated background patterns.

AD-783 742/0GA PC$6.50/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
CREEP AND STATIC FATIGUE OF REINFORCED PLASTICS,
A. M. Skudra, F. Ya. Bulavs, and K. A. Rotsens. 14 Jun 74, 272p Rept no. FTD-MT-24-474-74
Edited machine trans. of mono. Polzuchest i Staticheskaya Ustalost Amirovannykh Plastikov, n.p., 1971 p1-238, by Robert Allen Potts.

Descriptors: *Reinforced plastics, *Elastic properties, *Strength(Mechanics), *Plastic deformation, Static loads, Shear strength, Tensile strength, Translations, USSR, Modulus of elasticity, Time dependence, Fatigue(Mechanics).

Contents:
Elasticity of reinforced plastics;
The elastic after-effect properties of reinforced plastics;
Strength of oriented reinforced plastics.

AD-783 746/1GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
EFFECT OF ALLOYING A NICKEL MATRIX WITH THE METAL OF REINFORCING FIBERS ON STRUCTURAL STABILITY OF NICKEL-TUNGSTEN AND NICKEL-MOLYBDENUM COMPOSITE MATERIALS,
D. M. Karpinos, L. I. Tuchinskii, L. R. Vishnyakov, L. N. Pereselentseva, and L. N. Klimenko. 15 Apr 74, 15p Rept no. FSTC-HT-23-444-74
Trans. of Fizika i Khimiya Obrabotki Materialov (USSR) n6 p107-113 1972.

Descriptors: *Fiber reinforced composites, *Nickel alloys, *Tungsten alloys, *Molybdenum alloys, Tungsten, Fibers, Molybdenum, Phase transformations, Fabrication, Translations, USSR.

Producing structure-stable composite materials for the nickel-tungsten and nickel-molybdenum systems is examined. By alloying a matrix with tungsten to the limiting saturation of a nickel solution, models specimens reinforced with tungsten wire are obtained, in which the reinforcements do not dissolve to temperatures of 1000-1200C.

AD-783 756/0GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
COMPOSITE MATERIALS REINFORCED WITH FILIFORM CRYSTALS,
S. Z. Bokshtein, S. T. Kishkin, and I. L. Svetlov. 9 Aug 73, 11p Rept no. FSTC-HT-23-2516-72
Trans. of mono. from Metallovedenie, Moscow, 1971 p137-142.

Descriptors: *Fiber reinforced composites, *Whiskers(Crystals), Mechanical properties, Deformation, Elastic properties, Oxides, Translations, USSR.
Identifiers: *Whisker composites, Metal matrix composites.

The article shows how the strength of industrial materials can be increased by the creation of composites reinforced with filiform crystals. The technological problems involved in this process are discussed.

AD-783 762/8GA MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
CONSTRUCTION PLASTICS IN AIRCRAFT AND MISSILE PRODUCTION,
A. L. Abibov. 11 Sep 73, 71p Rept no. FSTC-HT-23-57-74
Trans. of mono. Primenie Konstruktsionnykh Plastmass v Proizvodstve Letatelnykh Apparatov, Moscow, 1971 p1-63.
Availability: Available in microfiche only.

Descriptors: *Fiberglass, *Glass reinforced plastics, Construction materials, Aircraft equipment, Molding techniques, Mechanical properties, Fabrication, USSR, Translations, Molecular structure.

The report is taken from a book which deals with the use of plastics in aircraft production this chapter deals with fiberglasses and glass reinforced plastics. Composition and properties of various materials are discussed, including considerations of polymer molecular structure and processing and fabrication techniques. Applications to aircraft technology are also described.

AD-783 841/0GA PC$3.75/MF$2.25
Air Force Materials Lab Wright-Patterson AFB Ohio
AN ALTERNATE GRAPHICAL REPRESENTATION OF FAILURE SURFACE.
Technical rept. Aug-Nov 73,
H. T. Hahn, and Stephen W. Tsai. May 74, 54p Rept no. AFML-TR-74-13

Descriptors: *Composite materials, *Laminates, *Failure(Mechanics), Graphics, Strain(Mechanics), Tensor analysis, Stress strain relations.

Failure surface of laminated composites can be constructed in special strain space such that the transformation of strain components becomes an orthogonal matrix. This construction provides a convenient means of studying strength of laminates consisting of arbitrary lamina orientations. This special construction of failure surface can be based on the maximum strain theory, the tensor polynomial theory or other failure criteria of the lamina. The effect of nonlinearity due to shear on the failure surface is also illustrated. (Author)

AD-783 851/9GA PC$4.50/MF$2.25
Southern Research Inst Birmingham Ala
NONDESTRUCTIVE EVALUATIONS OF COMPOSITE HEATSHIELD MATERIALS BEFORE AND AFTER AN UNDERGROUND NUCLEAR EXPOSURE.
Final rept. May 72-Nov 73,
James R. Brown, Jr., H. G. Sanders, and C. D. Pears. Jun 74, 122p AFWL-TR-73-247
Contract F29601-72-C-0058

Descriptors: *Composite materials, Heat shields, Nondestructive testing, Carbon, Phenolic plastics, Nuclear radiation, Mechanical properties, Thermal properties, Underground explosions.

Nondestructive evaluations were performed on various composite heatshield materials before and after underground nuclear exposure. Quality control nondestructive evaluations were used to select representative rings from a larger sample. Additional nondestructive testing and nondestructive mechanical (NDM) evaluations were used to characterize the selected rings before and after exposure. Improved methods of characterizing rings after exposure were developed and will be implemented in Carbon-Carbon Design Program. The materials evaluated included an angled, tape-wrapped carbon-phenolic (R6300); 3D carbon/quartz-phenolic 3DC/QP); 3D carbon-phenolic (3DCP); 3D carbon-carbon (3DCC); and felt carbon-carbon (felt CC). All materials were evaluated before underground exposure. After exposure the R6300, 3DCC, and felt CC were evaluated. In the follow-on program the two CC materials will receive further evaluations. (Author)

AD-783 860/0GA PC$6.50/MF$2.25
Naval Postgraduate School Monterey Calif
LABORATORY DEVELOPMENT AND TENSILE TESTING OF GRAPHITE/GLASS/EPOXY HYBRID COMPOSITE MATERIALS.
Master's thesis,
Robert James Linnander. Jun 74, 70p

Descriptors: *Fiber reinforced composites, Epoxy compounds, Epoxy resins, Matrix materials, Composite materials, Carbon fibers, Graphite, Fiberglass, Manufacturing, Theses.

Most advanced composite materials in use today consist of a single type of reinforcing fiber embedded in a matrix. There are possible advantages, however, in a system which used multiple types of reinforcing fibers. Such a material is called a 'hybrid' or 'mixed modulus' composite. This thesis describes the establishment of a composites laboratory facility at the Naval Postgraduate School and the development of manufacturing techniques to produce high-quality hybrid composite specimens for testing. Glass/graphite/epoxy hybrid specimens manufactured in this laboratory were tested to determine the dependence of material properties on the relative orientations of the fibers. Results of the test program were compared with predictions made using classical laminate theory. (Author)

11E. Fibers and Textiles

PATENT-3 736 177 Not available NTIS
Department of the Army Washington D C
WATER AND OIL-RESISTANT, ANTISTATIC AND ABRASION-RESISTANT FINISH FOR NYLON FABRICS.
Patent,
Norman S. Buchan, and Gil M. Dias. Filed 12 May 71, patented 29 May 73, 3p Rept nos. PAT-APPL-143 184,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Patents, *Nylon, *Protective coatings, *Fabrics, Waterproofing, Antistatic techniques, Curing, Isocyanates, Fluorohydrocarbons, Polymers, Emulsions, Epoxy resins.
Identifiers: PAT-CL-117-138-8-N, *Textile finishing, Abrasion resistant coatings, Oil resistance, Antistatic agents, Polyamines.

The invention relates to a process that provides a water and oil-resistant, antistatic and abrasion-resistant finish for nylon fabrics. The nylon is prepared from hexamethylenediamine and adipic acid or its derivatives. The process involves applying an aqueous emulsion containing a long chain aliphatic isocyanate, an organic fluoropolymer, and a reaction product of a water soluble polyamine having polyalkylene oxide groups and an epoxide or halohydrin compound and curing said composition on the nylon fabric at temperatures in excess of 300F.

PATENT-3 768 965 Not available NTIS
Department of Agriculture, Washington, D.C.
ACTIVATED SINGLE BATH PEARL GRAY CHROME GREEN MINERAL DYEING AND COMPOSITION THEREFOR.
Patent,
Charles J. Conner. Filed 31 Aug 71, patented 30 Oct 73, 4p PAT-APPL-176 736,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Fabrics, *Dyeing, *Patents, Fungus resistant coatings, Chromium inorganic compounds, Ammonium compounds, Zirconium inorganic compounds, Copper inorganic compounds.
Identifiers: Chromium chlorides, PAT-CL-8-17.

The present invention consists of treating chromic chloride with ammonium oxalate and an ammoniacal solution. When zirconyl ammonium carbonate is used with ammonium hydroxide, a water soluble chromium zirconium hydrated oxide complex is produced with the excess ammoniacal alkalinity. When this solution (bath) is applied to cellulosics, and the cellulosics heated to dryness and cured, the hydrated zirconia and green chromium oxide are deposited as an insoluble residue to produce a uniform mineral dyeing. When copper metaborate, copper hydroxide, or copper carbonate is solubilized in the ammonium hydroxide, prior to addition to the formulation, the bath is compatible, and a fungicidal 'pearl gray' mineral dyeing is deposited in cellulosics by heat curing.

11F. Metallurgy and Metallography

AD-783 497/1GA PC$4.00/MF$2.25
Philco-Ford Corp Newport Beach Calif Aeronutronic Div
DEFORMATION OF STEEL.
Final rept.,
T. J. Koppenaal. Feb 74, 8p
Contract N00014-70-C-0223

Descriptors: *Steel, *Plastic deformation, *Yield strength, Austenite, Carbon steels, Carbides, Grain size, Dislocations.

The object of this program was to determine the factors controlling the strengthening that can be obtained in austenitic steels by the introduction of plastic deformation accomplished prior to austenitizing. After reversion to austenite the yield strength of both the low carbon alloy and the medium carbon steel increased with increasing amounts of prior deformation. The reversion process by itself (without any prior deformation) appreciably strengthens the austenite. The effect of carbon on the strength of reverted austenite is seen to increase with increasing amounts of prior deformation. Without any prior deformation, the structure of the reverted austenite in both alloys appears as a stack of sheared plates with a high dislocation density. The strengthening due to the reversion process alone can be explained on the basis of the observed grain size refinement and increase in dislocation density. The medium carbon steel is further strengthening by the presence of carbides.

AD-783 539/0GA PC$3.25/MF$2.25
California Univ Berkeley Dept of Materials Science and Engineering
CRYOGENIC TOUGHNESS THROUGH MICROSTRUCTURE CONTROL IN A FERRITIC FE-NI-ALLOY.
Technical rept.,
S. Jin, B. Whitaker, J. W. Morris, Jr., and V. F. Zackay. Jun 74, 27p Rept no. TR-4
Contract N00014-69-A-0200-1062

Descriptors: *Iron alloys, *Nickel alloys, *Cryogenics, Titanium alloys, Impact strength, Toughness, Yield strength, Grain size.
Identifiers: Iron alloy 12Ni 1/4 Ti.

This paper discusses the selection of composition and processing of a ferritic Fe-Ni-Ti alloy having a favorable combination of strength and toughness at cryogenic temperature. Criteria on alloy composition lead to the choice of low interstitial Fe-12Ni-0.25Ti. The alloy naturally has a favorable microstructure, but cryogenic toughness must be imparted through grain refinement. Several alternate procedures are identified. Four of these are discussed in detail, along with the resulting tensile properties at 77K, Charpy impact energies at 77K and 5K, and behavior in fracture toughness tests at 77K. Alloys are obtained having yield strengths to 150 KSI with impact toughness to 5K. (Author)

AD-783 542/4GA PC$3.25/MF$2.25
Northwestern Univ Evanston Ill
ON THE METHOD OF OBTAINING THE RESIDUAL STRESS STACKING FAULT PROBABILITY AND OTHER PARAMETERS FROM AN ANALYSIS OF PEAK SHIFTS OF SEVERAL BRAGG PEAKS.
Technical rept.,
R. H. Marion, and J. B. Cohen. 1 Aug 74, 26p Rept no. TR-10
Contract N00014-67-A-0356-0008

Descriptors: *Residual stress, *Deformation, *X ray diffraction, Measurement, Brass, Steel, Copper alloys, Gold alloys, Crystal defects, Least squares method, Intermetallic compounds.
Identifiers: Copper intermetallics, Gold intermetallics.

Values of fault probabilities, lattice parameter and residual stress in deformed specimens are often obtained from positions of several peaks in a standard diffraction pattern. In the light of recent results on the effects of macro- and micro-stresses on peak positions, it is shown that this procedure is inadequate. Three different materials were chosen for this study. They were ordered Cu3Au, 1045 steel and 70-30 brass. (Modified author abstract)

AD-783 616/6GA PC$3.75/MF$2.25
Battelle Columbus Labs Ohio
THE COLLECTION, GENERATION, AND ANALYSIS OF MIL-HDBK-5 ALLOWABLE DESIGN DATA.
Annual rept. 15 Feb 73-15 Feb 74,
Paul E. Ruff, and Walter S. Hyler. May 74, 66p
AFML-TR-74-67
Contract F33615-73-C-5053

Descriptors: *Fatigue(Mechanics), *Aluminum alloys, *Titanium alloys, *Steel, Crack propagation, Stress corrosion, Stress strain relations, Statistical analysis, Fracture(Mechanics), Toughness, Fastenings, Aircraft.
Identifiers: Aluminum alloy 2024, Aluminum alloy 7075.

The annual report describes highlights of the activities, and progress of the MIL-HDBK-5 program from February 15, 1973, through February 15, 1974. The Military Standardization Handbook, MIL-HDBK-5B, 'Metallic Materials and Elements for Aerospace Vehicle Structures', is recognized as the primary source for design allowable data by the Department of Defense (DoD) and other Government agencies responsible for aerospace vehicle design. The Handbook contains design allowable data on metallic materials, fasteners, joints, and other structural elements. A fatigue data consolidation and statistical analysis procedure was developed. The method of analysis was tested on collections of fatigue data for 2024 and 7075 aluminum alloys, Ti-6Al-4V alloy, and 300M steel with generally good results. Topics studied include fracture toughness stress corrosion and stress strain relations.

AD-783 677/8GA PC$3.25/MF$2.25
Northwestern Univ Evanston Ill Dept of Materials Science
ANOMALIES IN MEASUREMENT OF RESIDUAL STRESS BY X-RAY DIFFRACTION.
Technical rept.,
R. H. Marion, and J. B. Cohen. 1 Jul 74, 49p Rept no. TR-9
Contract N00014-67-A-0356-0008

Descriptors: *Residual stress, *Plastic deformation, *X ray diffraction, Measurement, Stresses, Steel, Iron, Copper alloys, Gold alloys, Intermetallic compounds.
Identifiers: Copper intermetallics, Gold intermetallics.

Residual stresses are expected to lead to a linear dependence of the interplanar spacing, d, on sine squared psi (where psi is the sample tilt) and the stress can be obtained from the slope of this line. As a result of the linear dependence a two-tilt method is often employed to obtain the stress. However, when a specimen is subjected to extensive plastic deformation large deviations from a straight line can occur and a two-point method can lead to an erroneous stress determination. The results reported here show that: (1) this is more likely to occur in homogeneous materials than in multiphase materials (2) the oscillations follow closely the variation in peak intensity due to texture (3) the oscillations are caused by microstresses which are due to an 'orientation' effect as suggested by Weidemann. A simple, easy-to-use procedure has been developed and tested to correct the data and obtain the correct macrostress. The materials used were Armco iron, steel and ordered Cu3Au. (Modified author abstract)

AD-783 704/0GA PC$3.00/MF$2.25
Battelle Columbus Labs Ohio
THE INTERACTION BETWEEN LINE FORCE ARRAYS AND PLANAR CRACKS.
Technical rept.,
J. P. Hirth, R. G. Hoagland, and P. C. Gehlen. Jul 74, 17p Rept no. TR-21
Contract N00014-70-C-0390
Prepared in cooperation with Ohio State Univ., Columbus. Dept. of Metallurgical Engineering.

Descriptors: *Crystal defects, *Fracture(Mechanics), Computerized simulation,

Iron, Crack propagation, Hydrogen embrittlement.

The utility of line force fields in computer simulations of lattice defects is discussed. These fields are shown to provide a facile method for introducing realistic flexible boundary conditions on simulated atomic crystallites. The pertinent elastic fields for line force arrays lying parallel to the tip of a planar crack are presented. The method has been successfully applied to a study of hydrogen embrittlement of alpha-iron. The usage of this type technique is particularly important in the case where nonequilibrium phenomena--such as unstable crack growth--are studied. (Modified author abstract)

AD-783 718/0GA Reprint
Battelle Columbus Labs Ohio
CRACK EXTENSION IN A MODEL OF ALPHA-IRON.
Technical rept.,
P. C. Gehlen. 27 Aug 73, 6p Rept no. TR-22
Contract N00014-70-C-0390
Availability: Pub. in Script Metallurgica, v7 p1115-1118 1973.

Descriptors: *Iron, *Fracture(Mechanics), Crack propagation, Mathematical models, Computerized simulation, Elastic properties.
Identifiers: Body centered cubic lattices, Stress intensity factor.

Although in previous work, cracks could be made to propagate in computer models of BCC iron, the wrong cleavage plane was predicted. In this study, anisotropic elasticity has been used with the boundary problem. Also, the image forces required to keep the crack faces stress free have been included, and, as a result the experimentally observed (100) cleavage plane is also observed in the model. (Author)

AD-783 724/8GA PC$3.00/MF$2.25
Battelle Columbus Labs Ohio
ATOMIC CRACK SIMULATION IN FRACTURE MECHANICS.
Technical rept.,
P. C. Gehlen, G. T. Hahn, and M. F. Kanninen. Jul 74, 8p Rept no. TR-19
Contract N00014-70-C-0390
Presented at the International Conference (3rd) on Fracture (3rd), Munich, 8-13 April 73.

Descriptors: *Iron, *Fracture(Mechanics), Crack propagation, Computerized simulation, Mathematical models, Atomic structure, Bonding.
Identifiers: Body centered cubic lattices.

Using computer simulation, the authors have attempted to relate the macroscopic fracture properties of bcc iron to phenomena on the atomic scale. Although bonds can be made to rupture in the computer model (brittle fracture), the predicted cleavage plane is the (100) plane. This discrepancy is attributed to the approximations made in the flexible boundary. (Author)

AD-783 725/5GA PC$3.25/MF$2.25
Battelle Columbus Labs Ohio
AN ATOMIC MODEL OF AN ENVIRONMENTALLY-AFFECTED CRACK IN BCC IRON.
Technical rept.,
A. J. Markworth, M. F. Kanninen, and P. C. Gehlen. Jul 74, 32p Rept no. TR-20
Contract N00014-70-C-0390
Presented at the International Conference on Stress Corrosion Cracking and Hydrogen Embrittlement of Iron Base Alloys, Unieux-Firminy (France) 10-16 Jun 73.

Descriptors: *Iron, *Fracture(Mechanics), Crack propagation, Hydrogen embrittlement, Computerized simulation, Atomic structure, Mathematical models.
Identifiers: Body centered cubic lattices.

Results of atomistic calculations of the effects of hydrogen on crack propagation in bcc iron are presented. The iron-iron interaction is represented by the Johnson interatomic potential, whereas the hydrogen-iron potential is based on results obtained by Walker, et al., using many-body perturbation theory. The effect of the hydrogen is to shorten the distances between the four iron atoms surrounding it. As a result, other adjacent iron-iron bonds are elongated and finally break, one at a time, at a load that is about 10% smaller than the normal failure load in alpha-iron. (Author)

AD-783 765/1GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
SELECTION OF COMPOSITION AND HEAT TREATMENT OF CAST MAGNETIC ALLOYS.
A. A. Zabolotskii. 3 May 74, 6p Rept no. FSTC-HT-23-2372-72
Trans. of mono. Osnovy Obrazovaniya Liteinykh Splavov, Moscow, n.d., p340-343.

Descriptors: *Magnetic alloys, Cobalt alloys, Iron alloys, Heat treatment, Composition(Property), Iron alloys, Titanium alloys, Nickel alloys, Copper alloys, Aluminum alloys, Niobium alloys, Magnetic properties, Translations, USSR.

There are at present only two alloys - YuNDK24 and YuNDK35T5 (Co-Ti-Fe-Al-Cu-Ni-Nb) with high magnetic energy. The problem of making new alloys with magnetic properties is discussed. The composition of starting alloys, necessary heat treatment, and magnetic properties of obtained alloys are described. The effect of the content of Ni and Co, as well as of heat treatment on the magnetic properties of new alloys is also discussed.

AD-783 950/9GA PC$3.00/MF$2.25
Naval Postgraduate School Monterey Calif
A DISCUSSION OF DYNAMIC CRACK PROPAGATION IN BENT PLATES.
Interim rept. 1 Jul 73-30 Jun 74,
R. E. Ball. Apr 74, 9p Rept no. NPS-57BP74041

Descriptors: *Fracture(Mechanics), *Plates, *Aircraft equipment, *Fuel tanks, Crack propagation, Stress strain relations, Bibliographies, Numerical analysis, Metals.
Identifiers: *Hydraulic ram effect.

A major goal of the hydraulic ram technology program for aircraft fuel tanks is the development of analytical - numerical tools for the accurate prediction of damage to the tank due to a ballistic projectile. This report discusses the problem of cracking of the tank walls due to hydraulic ram pressures from the penetrating projectile. A bibliography of studies on dynamic crack propagation in transversely deflected thin plates is presented. (Author)

AEC-tr-7527 PC$3.25/MF$2.25
USAEC Technical Information Center, Oak Ridge, Tenn.
BEHAVIOR OF CORROSION PRODUCTS IN WATER-STEAM SYSTEMS AT HIGH TEMPERATURES.
O. J. Martynova. 1972, 22p
Translation of pp 8-13 from the VGB Feedwater Conference, Essen, Germany, 1972.

Descriptors: (*Corrosion products, *Power plants), (*Turbines, Corrosion products), (*Boilers, Corrosion products), Copper oxides, Deposition, Iron oxides, Silicon oxides, Steam, Ussr, Water.

For abstract, see NSA 30 04, number 10266.

AGARD-R-618 PC$10.50/MF$2.25
Advisory Group for Aerospace Research and Development, 92 - Neuilly-sur-Seine (France).
SURVEY OF ACTIVITIES IN THE FIELD OF LOW-CYCLE HIGH TEMPERATURE FATIGUE. CRITICAL REPORT.
J. M. Drapier. Feb 74, 148p CONF-731070-1
U.S. Sales Only.

Descriptors: (*Heat resisting alloys, Fatigue), (*Alloys, Fatigue), (*Fatigue, *High temperature), (*Materials testing, Fatigue), Belgium, Bibliographies, Canada, France, German federal republic, National organizations, Netherlands, Research programs, Reviews, United kingdom, Usa.

For abstract, see NSA 30 05, number 13164.

BARC-685 PC$4.75/MF$2.25
Bhabha Atomic Research Centre, Bombay (India).
STRESS CORROSION CRACKING AND PASSIVITY IN BINARY ZR--CR ALLOYS.
G. C. Palit, P. K. De, K. Elayaperumal, and J. Balachandra. 1973, 31p
U.S. Sales Only.

Descriptors: (*Zirconium, *Stress corrosion), (*Zirconium base alloys, Stress corrosion), (*Chromium alloys, Stress corrosion), Corrosion resistance, Cracks, Hydrochloric acid, Methanol, Passivation, Solutions.

For abstract, see NSA 30 04, number 10267.

CALT-822-58 PC$5.00/MF$2.25
California Inst. of Tech., Pasadena W.M. Keck Lab. of Engineering Materials.
EFFECT OF MANGANESE AND PHOSPHORUS CONCENTRATION ON THE ATOMIC DISTRIBUTION FUNCTION OF AMORPHOUS PD--MN--P ALLOYS.
N. I. Marzwell. Jan 74, 40p
Contract AT(04-3)-822

Descriptors: (*Palladium alloys, *Amorphous state), (*Manganese alloys, Amorphous state), (*Phosphides, Amorphous state), Atoms, Chemical composition, Crystal lattices, Crystal structure, Distribution, Monte carlo method, Quantity ratio, Quenching, Simulation.

For abstract, see NSA 30 04, number 12150.

CEA-R-4567 PC$5.25/MF$2.25
CEA Centre d'Etudes de Bruyeres-le-Chatel, 92 - Montrouge (France).
STUDY OF PHASE TRANSFORMATIONS IN TITANIUM ALLOY. III. STUDY OF ISOTHERMAL TRANSFORMATIONS OF BETA III TITANIUM ALLOY.
F. Vial, C. Beauvais, J. P. Fidelle, and B. Hocheid. May 74, 45p
In French. U.S. Sales Only.

Descriptors: (*Titanium base alloys, *Phase transformations), (*Molybdenum alloys, Phase transformations), (*Zirconium alloys, Phase transformations), (*Tin alloys, Phase transformations).

For abstract, see NSA 30 05, number 13165.

COM-74-50722/9GA Not available NTIS
National Bureau of Standards, Washington, D.C.
USE OF THE HARDNESS TEST IN THE STUDY OF THE PLASTIC DEFORMATION OF SINGLE CRYSTALS.
Final rept.,
Bernard J. Hockey. 1973, 30p
Pub. in Proceedings of ASM-AIME Symposium on the Science of Hardness Testing and Its Research Applications, Detroit, Mich., 18-21 Oct 71, ch3 p21-50.

Descriptors: *Plastic deformation, *Hardness tests, Metals, Loads(Forces), Dislocations, Single crystals.

The use of the hardness test in the study of the plastic deformation of single crystals is reviewed

and its applicability to materials of different mechanical behavior discussed. Emphasis is placed on those studies which demonstrate the unique or relative advantages of point loading. It is shown that valuable information on the conditions under which plastic flow occurs, on dislocation slip system identification, on deformational twinning, and on lattice friction effects have been obtained.

COM-74-50733/6GA Not available NTIS
National Bureau of Standards, Washington, D.C.
MAGNETIC STUDIES OF OXIDIZED IMPURITIES IN PURE COPPER USING A SQUID SYSTEM.
Final rept.,
F. R. Fickett, and D. B. Sullivan. Jun 74, 6p
Pub. in Jnl. of Physics F, v4 n6 p900-904 Jun 74.

Descriptors: *Copper, *Impurities, Magnetic properties, Iron, Oxidation, Magnetometers, Magnetic moments, Magnetic permeability.
Identifiers: SQUID(Superconducting Quantum Interference Devices), Superconducting quantum interference devices.

A magnetometer system using a SQUID and a superconducting flux transformer has been used to monitor the internal oxidation process in very pure copper. Both remnant moment and low field susceptibility have been measured for copper containing 0.1 - 1 at. ppm Fe and 70 at. ppm Fe in vrious states of anneal. The results suggest that the oxidation process proceeds quite differently in the previously unobserved situation where very dilute amounts of iron are present than in the case of relatively high impurity concentrations.

CONF-740615-1 PC$4.00/MF$2.25
Oak Ridge National Lab., Tenn.
AUGER ELECTRON SPECTROSCOPY OF FRACTURE SURFACES IN IRRADIATED TYPE 304 STAINLESS STEEL.
R. E. Clausing, and E. E. Bloom. 1973, 12p

Descriptors: (*Stainless steel-304, *Radiation effects), Auger electron spectroscopy, Chemical composition, Chromium, Fast neutrons, Fractures, Grain boundaries, Helium, High temperature, Iron, Neutron beams, Nickel, Phosphorus, Segregation, Sulfur, Surfaces.

For abstract, see NSA 30 04, number 10433.

COO-3158-30 PC$4.00/MF$2.25
Cornell Univ., Ithaca, N.Y.
GRAIN BOUNDARIES IN THIN-FILM BICRYSTALS OF SURFACE-REACTIVE METALS PREPARED BY VACUUM WELDING. REPORT NO. 2179.
W. R. Wagner, and R. W. Balluffi. Mar 74, 14p
Contract AT(11-1)-3158

Descriptors: (*Copper, *Grain boundaries), (*Aluminium, Grain boundaries), Control, Crystals, Electron microscopy, Films, Geometry, Interfaces, Metals, Phase transformations, Sample preparation, Substrates, Vacuum welding.

For abstract, see NSA 30 04, number 12155.

COO-3166-8 PC$4.00/MF$2.25
Cornell Univ., Ithaca, N.Y.
HYDROGEN GAS EMBRITTLEMENT. REPORT NO. 2121.
H. H. Johnson. Nov 73, 18p CONF-730992-2

Descriptors: (*Alloys, *Brittleness), Cracks, Deformation, Diffusion, Distribution, Hydrogen, Hydrogenation, Stresses.

For abstract, see NSA 30 04, number 10328.

COO-3479-5 PC$4.75/MF$2.25
State Univ. of New York, Stony Brook.
FATIGUE-ENHANCEMENT OF DIFFUSION. PROGRESS REPORT, JUNE 1, 1973--MAY 31, 1974.
H. Herman. 1974, 35p
Contract AT(11-1)-3479

Descriptors: (*Copper base alloys, *Sorptive properties), (*Zinc alloys, Sorptive properties), Diffusion, Electric conductivity, Fatigue, Point defects, Strains.

For abstract, see NSA 30 04, number 12156.

JAPFNR-147 PC$6.50/MF$2.25
Japan Atomic Energy Research Inst., Tokai, Ibaraki. Tokai Research Establishment.
METALLURGICAL MODIFICATION OF AUSTENITIC STAINLESS STEELS FOR USES IN FBR, A PRELIMINARY SURVEY.
T. Fujimura, T. Kondo, and H. Nakajima. Feb 74, 70p PNC-N-251-74-8
U.S. Sales Only.

Descriptors: (*Stainless steels, *Physical radiation effects), (*Fbr type reactors, Reactor materials), (*Reactor materials, Stainless steels), Ductility, Grain size, Heat treatments, Reviews, Swelling, Tensile properties.

For abstract, see NSA 30 04, number 10435.

KFK-EXT-6-73-6 PC$5.25/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Material- und Festkoerperforschung.
LITERATURE RESEARCH ON SOME PROPERTIES OF ZIRCALOY-4 AT HIGHER TEMPERATURES.
C. Petersen. Mar 74, 42p
In German. U.S. Sales Only.

Descriptors: (*Zircaloy 4, *Mechanical properties), Bibliographies, Data, Ductility, Emissivity, High temperature, Physical properties, Strains, Stresses, Thermal conductivity, Thermal expansion, Very high temperature.

For abstract, see NSA 30 04, number 10329.

KFKI-74-14 PC$4.00/MF$2.25
Kozponti Fizikai Kutato Intezet, Budapest (Hungary).
DIFFUSION PROCESS OF THE FORMATION OF MNBI FILMS PREPARED BY VACUUM EVAPORATION AND ANNEALING.
A. Lutter. 1974, 10p
U.S. Sales Only.

Descriptors: (*Manganese alloys, *Films), (*Bismuth alloys, Films), Annealing, Diffusion, Evaporation, Glass, High temperature, Intermetallic compounds, Layers, Mica, Substrates, Vacuum systems.

For abstract, see NSA 30 04, number 12100.

PATENT-3 726 773 Not available NTIS
Department of the Army Washington D C
SURFACE PREPARATION OF MARAGING STEEL FOR ELECTROPLATING.
Patent,
Vernon A. Lamb, John P. Young, and Wahling H. Ng. Filed 2 Aug 71, patented 10 Apr 73, 5p Rept nos. PAT-APPL-168 456,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Steel, *Surface finishing, *Patents, Electroplating, Nitric acid, Abrasion.
Identifiers: *Maraging steel, PAT-CL-204-129-35.

The patent discloses an improved method of preparing maraging steels for subsequent metal deposition. The method uses a combined nitric acid pickle-mechanical abrasion descaling step in conjunction with a low current density acidic electropolishing step to produce a scale free, activated surface for deposition of a very adherent electrodeposit.

PATENT-3 736 129 Not available NTIS
Department of the Army Washington D C
ALLOY STEEL.
Patent,
Bill N. Briggs. Filed 13 May 71, patented 29 May 73, 2p Rept nos. PAT-APPL-143 232,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Steel, *Armor, *Patents, Toughness, Thermomechanics.
Identifiers: PAT-CL-75-128-W, Alloy steel.

The patent discloses a low carbon-low alloy content steel which is highly responsive to thermal-mechanical processing with air hardening capability. The steel is compatible process-wise with typical tool steels useful in the impact layer of armor. The alloy steel of this invention yields a high toughness material useful as the backing material for the impact layer of armor.

PATENT-3 778 254 Not available NTIS
Atomic Energy Commission, Washington, D.C.
BRAZING FILLER METAL FOR MOLYBDENUM.
Patent,
Nancy C. Cole, Ronald W. Gunkel, and Clarence W. Houck. Filed 18 Nov 71, patented 11 Dec 73, 3p PAT-APPL-200 235
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Patents, *Molybdenum, *Brazing alloys, Iron alloys, Molybdenum containing alloys, Boron containing alloys, Carbon, Germanium containing alloys.
Identifiers: PAT-CL-75-123-R, Iron alloy 1B 4C 5Ge 15Mo, Iron alloy 1B 4C 15Mo.

This invention relates to an alloy consisting essentially of, in weight percent, adding up to 100 percent, 0.5 to 4.0 percent boron, 0.5 to 5.0 percent carbon, 15 to 30 percent molybdenum, and the balance iron. Germanium, in a range of 2 to 20 weight percent, may be added to this alloy for improved characteristics in some applications.

RISO-M-1701 PC$4.50/MF$2.25
Danish Atomic Energy Commission, Risoe. Research Establishment.
EXCHANGE INTERACTION IN THE HEAVY RARE EARTH METALS CALCULATED FROM ENERGY BANDS.
P. A. Lindgard. Feb 74, 26p
U.S. Sales Only.

Descriptors: (*Gadolinium, *Exchange interactions), (*Terbium, Exchange interactions), (*Dysprosium, Exchange interactions), (*Erbium, Exchange interactions), Brillouin zones, Electrons, Energy, Integral equations, Matrix elements.

For abstract, see NSA 30 04, number 10332.

RISO-M-1706 PC$4.00/MF$2.25
Danish Atomic Energy Commission, Risoe. Research Establishment.
COMPUTER SIMULATION OF THE LOW TEMPERATURE NEUTRON IRRADIATION, HIGH TEMPERATURE ANNEALING MODE OF VOID FORMATION IN MOLYBDENUM.
J. H. Evans. Apr 74, 19p
U.S. Sales Only.

Descriptors: (*Molybdenum, *Physical radiation effects), Annealing, Functional models, Neutron beams, Simulation, Swelling, Voids.

For abstract, see NSA 30 05, number 13251.

RISO-M-1712 PC$4.00/MF$2.25
Danish Atomic Energy Commission, Risoe. Research Establishment.
SWELLING RESISTANCE INDUCED BY GRAIN REFINEMENT AND PARTICLE DISPERSION IN AUSTENITIC STAINLESS STEEL DURING HIGH ENERGY ELECTRON IRRADIATION.
B. N. Singh. Apr 74, 20p
U.S. Sales Only.

Descriptors: (*Stainless steels, *Physical radiation effects), Aluminium oxides, Dispersions, Electron beams, Electron microscopy, Grain size, Helium, Ion implantation, Nucleation, Swelling, Voids.

For abstract, see NSA 30 05, number 13252.

SCL-DC-720372 PC$5.00/MF$2.25
Sandia Labs., Livermore, Calif.
LOAD POINT COMPLIANCE OF THE CHARPY IMPACT SPECIMEN.
H. J. Saxton, A. T. Jones, A. J. West, and T. C. Mamaros. Jul 73, 39p CONF-730690-1, RS-8232-2-39428
Contract AT(29-1)-789

Descriptors: (*Aluminium base alloys, *Charpy test), (*Steels, Charpy test), Finite element method, Fracture properties, Performance testing, Size, Strains, Supports.

For abstract, see NSA 30 04, number 12163.

SLA-74-5322 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
HIGH PRESSURE DIFFERENTIAL THERMAL ANALYSIS EXPERIMENTS WITH THE LANI SUB 5 --H SYSTEM.
R. P. Wemple. 1973, 15p CONF-740634-1

Descriptors: (*Lanthanum alloys, *Hydridation), (*Nickel alloys, Hydridation), Chemical reaction kinetics, Differential thermal analysis, Pressure dependence, Temperature dependence.

For abstract, see NSA 30 05, number 13131.

11G. Miscellaneous Materials

TT-73-58049 PC$4.00/MF$2.25
Agricultural Research Service, Washington, D.C.
KINETIC OF DYING OF SHEEP SKIN WITH REACTIVE DYESTUFFS (KINETIKA KRASHENIYA SHUBNOI OVCHINY AKTIVNYMI KRASITELYAMI),
T. Sadovski. 1974, 6p
Trans. of Kozhevenno-Obuvnaya Promyshlennost SSSR, v14 n1 p29-32 1972. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Hides, *Sheep, *Dyeing, Dyes, Adsorption, Vinyl compounds, Sulfones, Mixtures, Translations, USSR.

The object of the study is to determine the effect concentration, temperature, and pH has on the absorption and fixation of reactive dyestuffs on sheep leather materials. The dyes used contained vinyl sulphone groups.

11H. Oils, Lubricants, and Hydraulic Fluids

JAPFNR-152 PC$5.50/MF$2.25
Japan Atomic Energy Research Inst., Tokyo.
RADIATION RESISTANCE OF SOME HYDRAULIC FLUIDS FOR SHOCK ABSORBERS.
O. Tokunaga, T. Abe, and E. Kageyama. Jul 72, 49p PNC-J-250-72-20
U.S. Sales Only.

Descriptors: (*Aromatics, *Physical radiation effects), (*Siloxanes, Physical radiation effects), Cobalt 60, Fbr type reactors, Gamma radiation, Gases, Hydraulics, Oils, Physical properties, Radiation doses.

For abstract, see NSA 30 04, number 10477.

11I. Plastics

AD-783 692/7GA PC$3.00/MF$2.25
Naval Ordnance Lab White Oak Md
ELASTIC CONSTANTS OF BULK POLYMERS.
Technical rept.,
R. W. Warfield, and F. Robert Barnet. 18 Jun 74, 14p Rept no. NOLTR-74-80

Descriptors: *Modulus of elasticity, *Polymers, *Polyvinyl chloride, Epoxy resins, Plasticizers, Crosslinking(Chemistry), Polymers, Density, Phenolic plastics.
Identifiers: Bulk modulus, *Polyquinoxalines, ABS resins.

In previous work, a static multi-modulus technique was used for the simultaneous determination of Young's and bulk moduli on a single specimen of several polymeric materials. Now additional data have been obtained on a series of plasticized polyvinyl chloride polymers, on a series of polyphenyl-quinoxalines, cured with varying amounts of crosslinking agent, and on several other individual polymers. All the new data fit the same pattern as the earlier data. It was found that there is an optimum plasticizer content for PVC which maximizes moduli characteristics. In the case of the polyphenylquinoxaline, the elastic properties remained constant at all crosslinking agent concentrations. (Author)

AD-783 928/5GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
ULTRALOW FRICTION EFFECT,
A. Presnyakov. 17 Jul 74, 5p Rept no. FTD-HT-23-2120-74
Edited trans. of Gudok (USSR) n251 p4 Oct 72, by Frank C. Vaughn.

Descriptors: *Friction, *Polymers, *Radiation effects, Surface properties, Translations, USSR.

Soviet scientists discovered the phenomenon of ultralow friction of solids. The researchers observed that during irradiation of the surface of a polymer body, for example, of polyethylene rubbing with a metal in a vacuum, by a stream of accelerated helium atoms the transition from usual friction to ultralow friction is observed. Here, the value of the coefficient of friction reaches an order of thousandths. This effect was maintained in a wide range of velocities and large specific loads during the experiments. The authors believe that ultralow friction is caused by the fact that with the joint action of irradiation and friction a 'heating' of the surface defects occurs.

11L. Wood and Paper Products

COM-74-11378/8GA PC$3.25/MF$2.25
National Bureau of Standards, Washington, D.C. Paper Evaluation Section.
AN ANALYSIS OF THE AGING OF PAPER: POSSIBLE REACTIONS AND THEIR EFFECTS ON MEASURABLE PROPERTIES.
Interim rept.,
W. K. Wilson, and E. J. Parks. 26 Apr 74, 38p* NBSIR-74-499

Descriptors: *Papers, *Aging tests, Reviews, Chemical reactions, Cellulose, Hydrolysis, Crosslinking, Oxidation, Thermal degradation, Perserving, Documents, Archives, Catalysis, Metals, Air pollution, Measurement, Bibliographies.
Identifiers: *Aging(Materials).

Various reactions that cellulose can undergo are reviewed in relation to their bearing on the aging of paper. The principal reactions of cellulose are hydrolysis, oxidation, crosslinking, change in lateral order in the bonding area, and, during accelerated aging, thermal decomposition. The effects these various reactions might have on tests that are available for evaluating changes that occur during the aging of paper are reviewed. Suggestions are made concerning most sensitive tests for use in detecting changes in paper and tests, regardless of sensitivity, available for determining what happens during aging. Some general guidelines regarding specifications for permanent record papers are discussed. (Modified author abstract)

12. MATHEMATICAL SCIENCES

12A. Mathematics and Statistics

AD-783 540/8GA PC$3.25/MF$2.25
California Univ San Diego La Jolla
ASYMPTOTIC BEHAVIOR OF A SPLINE ESTIMATE OF A DENSITY FUNCTION,
Keh-Shin Lii, and Murray Rosenblatt. Jul 74, 37p
Contract N00014-69-A-0200-6016
Sponsored in part by National Science Foundation, Washington, D.C.

Descriptors: *Probability density functions, *Estimates, Splines, Analysis of variance, Curve fitting, Theorems, Turbulent flow, Wind.
Identifiers: *Cubic spline technique, Spline functions, Asymptotic normality.

A class of cubic spline estimators of probability density functions over a finite interval are considered in the paper. The precise asymptotic behavior of the bias and covariance of such estimators is obtained in the interior of the interval. The estimators are shown to be asymptotically normally distributed. The properties of these estimators are compared with those of kernel estimators. The kernel and spline estimators are compared in some Monte Carlo simulations as well as in the analysis of some data obtained in turbulent wind flow. (Author)

AD-783 592/9GA Reprint
Princeton Univ N J
EXPERIMENTS WITH MAXIMUM ENTROPY POWER SPECTRA OF SINUSOIDS.
Technical rept.,
W. Y. Chen, and G. R. Stegen. 18 Mar 74, 8p Rept no. TR-1
Contract N00014-67-A-0151-0031
Revision of report dated 9 Oct 73. Errata sheet inserted.
Availability: Pub. in Jnl. of Geophysical Research, v79 n20 p3019-3022, 10 Jul 74.

Descriptors: *Time series analysis, *Power spectra, Entropy, Estimates.

Burg's maximum entropy technique is applied to the estimation of power spectra of short sinusoids. The estimated spectral maximum was found to shift in relation to the true maximum. The frequency shifts depend upon the initial phase and the length of the sinusoid. The influence of the number of terms in the prediction error filter, the number of the data samples, and the noise intensity are also considered. (Author)

AD-783 681/0GA PC$8.00/MF$2.25
Utah Univ Salt Lake City Dept of Mathematics
SCATTERING THEORY FOR THE LAPLACIAN IN DOMAIN'S WITH CYLINDERS.
Technical summary rept. no. 23,

William C. Lyford. Mar 74, 96p
Contract N00014-67-A-0325-0006
Errata sheet inserted.

Descriptors: *Wave equations, Partial differential equations, Potential theory, Scattering, Operators(Mathematics), Hilbert space.
Identifiers: *Laplace equation, *Dirichlet problem, *Scattering theory.

In the paper the abstract two Hilbert space scattering theory is combined with the principle of limiting absorption to investigate the structure of the selfadjoint operator H and the associated wave equation determined by the negative Laplacian with a homogeneous Dirichlet or Neumann boundary condition in an unbounded domain in Euclidean N-space. The results in this paper can be applied to many problems of classical physics. Any system which satisfies the wave equation with a homogeneous Dirichlet or Neumann boundary condition in a domain omega is described by these results.

AD-783 685/1GA PC$3.25/MF$2.25
George Washington Univ Washington D C Dept of Statistics
ON THE ONE ARM BANDIT PROBLEM.
Technical rept.,
Michael Woodroofe. 29 Jul 74, 29p Rept no. TR-21
Contract N00014-67-A-0214-0015

Descriptors: *Sequential analysis, Normal density functions, Bayes theorem, Asymptotic series, Theorems.
Identifiers: *One arm bandit problem, Stopping rules(Mathematics).

The author considers the one arm bandit problem when future losses are discounted by a factor gamma per time period, 0 < gamma < 1. The author adopts a Bayesian approach and formulates the problem as an optimal stopping problem. In the case of a uniform distribution with an unknown range or normal distribution with an unknown mean, it is shown that the boundaries of the continuation region in the parameter space of the conjugate prior family approach limits as gamma nears 1 (after appropriate normalization in the normal case). (Modified author abstract)

AD-783 687/7GA PC$3.00/MF$2.25
College of William and Mary Williamsburg Va Dept of Mathematics
SUCCESSIVE EQUILIBRATION OF ILL-CONDITIONED MATRICES.
Technical rept.,
William G. Poole, Jr. Dec 73, 7p Rept no. TR-4
Contract N00014-73-A-0374-0001

Descriptors: *Linear algebraic equations, *Matrices(Mathematics), Computations, Inequalities.

A method for reducing the condition number of an ill-conditioned linear algebraic system is discussed. It is based on the idea of scaling the matrix before each step of Gauss elimination. The method is not competitive with Householder or fast Givens orthogonal transformation methods or methods based on the singular value decomposition. (Author)

AD-783 688/5GA PC$3.25/MF$2.25
George Washington Univ Washington D C Dept of Statistics
ANALYSIS OF INTERACTIONS BETWEEN CATEGORICAL VARIABLES.
Technical rept.,
S. Kullback, and P. N. Reeves. 2 Aug 74, 21p Rept no. TR-22
Contract N00014-67-A-0214-0015, Grant AF-AFOSR-1513-69

Descriptors: *Multivariate analysis, *Hospitals, Data acquisition, Health, Discriminate analysis.
Identifiers: Contingency tables, Innovations.

The priaciple of minimum discrimination information estimation and associated procedures are applied to data from a survey of hospitals to determine the relationship of innovativeness on certain hospital characteristics. (Author)

AD-783 695/0GA PC$3.25/MF$2.25
College of William and Mary Williamsburg Va Dept of Mathematics
AN ALGORITHM FOR REDUCING THE BANDWIDTH AND PROFILE OF A SPARSE MATRIX.
Technical rept.,
Norman E. Gibbs, William G. Poole, Jr., and Paul K. Stockmeyer. Jul 74, 33p Rept no. TR-5
Contract N00014-73-A-0374-0001, Grant NGR-47-102-001

Descriptors: *Matrices(Mathematics), Bandwidth, Computations, Algorithms.
Identifiers: Finite element analysis, Graph theory, *Sparse matrix.

A new algorithm for reducing the bandwidth and profile of a sparse matrix is described. Extensive testing on finite element matrices indicates that the algorithm typically produces bandwidth and profile which are comparable to those of the common-used reverse Cuthill-McKee algorithm, yet requires significantly less computation time. (Author)

AD-783 719/8GA PC$3.00/MF$2.25
Southern Methodist Univ Dallas Tex Dept of Statistics
ON A UNIFICATION OF BIAS REDUCTION AND NUMERICAL APPROXIMATION.
Technical rept.,
H. L. Gray. Jul 74, 23p Rept no. TR-121
Contract N00014-72-A-0296

Descriptors: *Numerical analysis, *Approximation, *Statistical decision theory, Numerical integration, Fourier transformation, Power series, Interpolation, Theorems.
Identifiers: Jackknife method, Estimation theory, Approximation theory.

In this paper it is shown that the problem of numerical approximation and bias reduction are basically the same problem and that many of the classical numerical methods are equivalent to the so-called jackknife method. In particular it is shown that Simpson's rule, Romberg integration, Newton-Cotes methods, Lagrange interpolation, the epsilon-algorithm, G-transforms, and others are simply special cases of the generalized jackknife. These observations are then used to obtain a new consistent estimator for the spectral density function. (Author)

AD-783 785/9GA PC$4.75/MF$2.25
Naval Postgraduate School Monterey Calif
THE GENERATION OF POISSON RANDOM DEVIATES.
Master's thesis,
Chae Ha Pak. Sep 74, 34p

Descriptors: *Poisson density functions, *Random variables, Statistical samples, Approximation, Computer applications, Theses.

Three approximation methods for generating outcomes on Poisson random variables are discussed. A comparison is made to determine which method requires the least computer execution time and to determine which is the most robust approximation. Results of the comparison study suggest the method to choose for the generating procedure depends on the mean value of Poisson random variable which is being generated. (Author)

AD-783 893/1GA PC$6.00/MF$2.25
Georgia Univ Athens Dept of Statistics and Computer Science
STRUCTURE AND DISTANCE OF LOGICAL PATTERNS. APPENDIX. VOLUME I.
Final rept.,
Rolf Bargmann. Jul 74, 233p Rept no. THEMIS-UGA-33-Vol-1
Contract N00014-69-A-0423
See also AD-728 427.

Descriptors: *Statistical analysis, *Pattern recognition, Estimates, Matrices(Mathematics), Computer programs, Subroutines, FORTRAN, Distribution functions, Tables(Data).
Identifiers: Themis project, FORTRAN 4 programming language.

The author illustrates some of the techniques of the previous chapters by considering two numerical examples. These examples were constructed on the basis of artificial sets of parameters. In Example I, a set of 13 diagnostic events each being in 2 states was observed assuming a major event in 3 states, whereas in Example II, a set of 15 diagnostic events, each being in 3 states, was observed assuming a major event in 2 states. In each example, time-dependence of rows has been assumed.

AD-783 894/9GA PC$6.75/MF$2.25
Georgia Univ Athens Dept of Statistics and Computer Science
STRUCTURE AND DISTANCE OF LOGICAL PATTERNS. APPENDIX. VOLUME II.
Final rept.,
Rolf Bargmann. Jul 74, 288p Rept no. THEMIS-UGA-33-Vol-2
Contract N00014-69-A-0423
See also AD-783 893.

Descriptors: *Statistical analysis, *Pattern recognition, Distribution functions, Computer programs, FORTRAN, Subroutines.
Identifiers: Themis project, FORTRAN 4 programming language.

The report contains appendices F, G and H of the Themis Project study 'Structure and Distance of Logical Patterns'.

AD-783 895/6GA PC$7.50/MF$2.25
Georgia Univ Athens Dept of Statistics and Computer Science
STRUCTURE AND DISTANCE OF LOGICAL PATTERNS. APPENDIX. VOLUME III.
Final rept.,
Rolf Bargmann. Jul 74, 331p Rept no. THEMIS-UGA-33-Vol-3
Contract N00014-69-A-0423
See also AD-783 894.

Descriptors: *Statistical analysis, *Pattern recognition, Distribution functions, Multivariate analysis, Computer programs, FORTRAN.
Identifiers: Themis project, FORTRAN 4 programming language.

The report contains appendices I, J, K and L of the Themis project study 'Structure and Distance of Logical Patterns'.

AD-783 948/3GA PC$3.25/MF$2.25
Purdue Univ Lafayette Ind Dept of Statistics
ON SUBSET SELECTION PROCEDURES FOR THE ENTROPY FUNCTION ASSOCIATED WITH THE BINOMIAL POPULATIONS.
Technical rept.,
Shanti S. Gupta, and Deng-Yuan Huang. Jul 74, 29p Rept no. Mimeograph Ser-379
Contract N00014-67-A-0226-0014

Descriptors: *Sampling, *Distribution functions, Set theory, Selection, Entropy, Computations.
Identifiers: Ranking, Binomial density functions.

In the paper, the authors propose and study some subset selection procedures for binomial populations in terms of the entropy functions. These procedures are considered for some generalized entropy functions. Some selection procedures to select a subset which contains all populations better (larger entropy) than a standard are discussed. The distribution of the sample entropy

range for testing the homogeneity in terms of entropy functions, and an application for the selection problem in terms of the Kullback-Leibler information are discussed. Values of constants that are needed for the subset selection procedure are given.

CEA-R-4561 PC$9.00/MF$2.25
CEA Centre d'Etudes Nucleaires de Fontenay-aux-Roses, 92 (France). Dept. de Protection.
STUDY OF MULTIPLE TIME SERIES BY DATA ANALYSIS.
J. M. Braun. May 74, 117p
In French. U.S. Sales Only.

Descriptors: (*Gamma spectroscopy, *Li-drifted junction detectors), (*Gamma spectra, *Data processing), Data acquisition, Peaks.

For abstract, see NSA 30 04, number 12075.

COM-74-11433/1GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
CONTROL THEORY. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1970-Jul 74,
David W. Grooms. Sep 74, 219p* NTIS/WIN-74/069
Supersedes rept. no. NTIS/WIN-74/005, COM-74-10104.

Descriptors: *Control theory, *Bibliographies, Automatic control, Feedback control, Adaptive systems, Mathematical programming, Economic models, Process control, Air traffic control, Production control, Flight control, Radar tracking, Abstracts.
Identifiers: *Stochastic control, Estimation theory, Filtering theory.

This bibliography contains 203 selected abstracts of research reports retrieved using the NTIS on-line search system - NTISearch. The report presents recent research in automatic control, stochastic control, and feedback control with multidisciplinary applications. Some of the applications include flight control, production control, and process control.

COO-2280-5 PC$5.00/MF$2.25
Northwestern Univ., Evanston, Ill.
CONVERGENCE ANALYSIS OF SOME FACTORIZATION ITERATIVE METHODS FOR M-MATRICES.
R. Beauwens. Oct 73, 37p
Contract AT(11-1)-2280

Descriptors: (*Mathematics, *Iterative methods), Factorization, Matrices, Numerical solution, Series expansion.

For abstract, see NSA 30 04, number 12076.

COO-2280-6 PC$4.00/MF$2.25
Northwestern Univ., Evanston, Ill.
TRANSCENDENTAL FUNCTIONS GENERALIZING THE EXPONENTIAL INTEGRALS.
I. K. Abu-Shumays. Nov 73, 16p
Contract AT(11-1)-2280

Descriptors: Asymptotic solutions, Integral equations, Mathematics, Series expansion, Transport theory.

For abstract, see NSA 30 04, number 12077.

COO-2280-7 PC$5.50/MF$2.25
Northwestern Univ., Evanston, Ill.
POINT AND BLOCK FACTORIZATION ITERATIVE METHODS FOR ARBITRARY MATRICES AND THE CHARACTERIZATION OF M-MATRICES.
R. Beauwens. Jan 74, 50p
Contract AT(11-1)-2280

Descriptors: (*Iterative methods, *Matrices), Asymptotic solutions, Factorization, Series expansion.

For abstract, see NSA 30 04, number 12078.

COO-2383-8 PC$4.00/MF$2.25
Illinois Univ., Urbana Dept. of Computer Science.
SOME MATRIX RESULTS FOR STABLE M-DIMENSIONAL ROTATIONS.
C. W. Gear. 15 Apr 74, 10p UIUCDCS-R-74-634
Contract AT(11-1)-2383

Descriptors: (*Rotation, *Equations), Display devices, Eigenvectors, Mathematics, Matrices, Real time systems.

For abstract, see NSA 30 04, number 12176.

COO-3498-16 PC$4.00/MF$2.25
Rochester Univ., N.Y. Dept. of Chemistry.
SOLUTION OF THE PERCUS--YEVICK EQUATION IN TWO DIMENSIONS.
F. Mandel. 1974, 6p
Contract AT(11-1)-3498

Descriptors: (*Percus-yevick equation, *Numerical solution), Accuracy, Correlation functions, Density, Fluids, Integral equations, Liquids, Perturbation theory, Thermodynamic properties, Two-dimensional calculations.

For abstract, see NSA 30 05, number 14702.

DEMO-74-1 PC$4.00/MF$2.25
Democritus Nuclear Research Center, Athens (Greece).
LOWER BOUND FOR THE L EXP 1 NORM OF EXPONENTIAL SUMS.
S. K. Pichorides. 1974, 8p
U.S. Sales Only.

Descriptors: (*Polynomials, *Boundary conditions).

For abstract, see NSA 30 05, number 14734.

IS-M-16 PC$4.50/MF$2.25
Ames Lab., Iowa.
PROJECTION ALGORITHM FOR SOLVING NONLINEAR SYSTEMS OF EQUATIONS.
D. D. Georg, and R. F. Keller. 1974, 26p CONF-740511-4

Descriptors: (*Algorithms, *Nonlinear problems), Computers, Programming.

For abstract, see NSA 30 04, number 12082.

IS-3396 PC$5.45/MF$2.25
Gulf Nuclear Fuels Co., Elmsford, N.Y.
DIRECT METHOD BASED ON PROJECTIONS FOR SOLVING SYSTEMS OF LINEAR EQUATIONS.
D. W. Harms, and R. F. Keller. May 74, 70p
Contract AT(11-1)-2210

Descriptors: Equations, Errors, Gaussian processes, Iterative methods, Mathematics, One-dimensional calculations, Projection operators.

For abstract, see NSA 30 05, number 14703.

JINR-P4-7803 PC$4.50/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
DYNAMICAL THEORY OF ISOTHERMAL RESPONSE TO MECHANICAL PERTURBATION AND GREEN FUNCTIONS.
V. P. Kalashnikov. 1974, 30p
In Russian. U.S. Sales Only.

Descriptors: (*Thermostats, *Disturbances), Green function, Mechanics.

For abstract, see NSA 30 04, number 12180.

PB-233 273/2GA PC$4.00/MF$2.25
Illinois Univ., Urbana. Dept. of Computer Science.
BOUNDS FOR SELECTIONS,
Laurent Hyafil. Jun 74, 12p UIUCDCS-R-74-651
Grant NSF-GJ-41538

Descriptors: *Computation, Algorithms, Set theory, Game theory, Theorems, Computer programming.

The paper discusses the minimum number of comparisons necessary for the computation of the kth element of a totally ordered set of size n,(v sub k)(n).

SAND-74-5018 PC$6.50/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
CONVERSION OF BOUNDARY-VALUE PROBLEMS INTO STABLE INITIAL-VALUE PROBLEMS VIA SEVERAL INVARIANT IMBEDDING ALGORITHMS.
M. R. Scott. 1974, 70p CONF-740627-1

Descriptors: Algorithms, Boundary conditions, Conversion, Differential equations, Eigenvalues, Invariant imbedding, Mathematics, Numerical solution.

For abstract, see NSA 30 05, number 14708.

SLA-74-284 PC$9.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.; Sandia Labs., Livermore, Calif.
BIBLIOGRAPHY ON INVARIANT IMBEDDING AND RELATED TOPICS.
M. R. Scott. Jun 74, 120p
Contract AT(29-1)-789

Descriptors: (*Invariant imbedding, *Bibliographies).

For abstract, see NSA 30 04, number 11660.

SLL-74-234 PC$4.25/MF$2.25
Sandia Labs., Livermore, Calif.
CONSTRAINED LEAST SQUARES POLYNOMIAL FITS.
R. E. Huddleston. May 74, 21p
Contract AT(29-1)-789

Descriptors: (*Computer codes, *C codes), (*Least square fit, *Mathematics), Polynomials.

For abstract, see NSA 30 04, number 12086.

12B. Operations Research

AD-783 676/0GA PC$3.25/MF$2.25
Naval Postgraduate School Monterey Calif
EQUILIBRIUM EQUATIONS AND A COMPUTATION METHOD FOR MATRIX DIFFERENTIAL GAMES (MDG).
Technical rept.,
A. R. Washburn, and B. O. Shubert. Jun 74, 29p
Rept no. NPS55WS74061

Descriptors: *Game theory, Equilibrium(General), Computations, Matrices(Mathematics), Theorems.
Identifiers: Matrix games, Differential games.

It is shown that Danskin's omega-value of a matrix-differential game can be obtained as a solution of a finite system of equations, each involving a single maximization of minimization. A computation method is proposed based on these equations. (Author)

AD-783 689/3GA PC$3.25/MF$2.25
George Washington Univ Washington D C Dept of Statistics

AN EIGENVECTOR STRUCTURE FOR A FACILITIES LOCATION PROBLEM AND A RELATED ALGORITHM.
Technical rept.,
C. Terrence Ireland. 5 Aug 74, 34p Rept no. TR-23
Contract N00014-67-A-0214-0015

Descriptors: *Facilities, *Position(Location), Eigenvectors, Permutations, Computations, Algorithms, Mathematical models.
Identifiers: *Quadratic assignment problem, Traveling salesman problem, *Location problems.

The special case of the quadratic assignment problem, find a permutation tau of (1,2,...,n) which minimizes the summation from j = 1 to n of c sub (j tau(j)) + (the summation from j = 1) to n)) (the summation from k = 1 to n) (f sub jk) d sub (tau(j) tau(k)) is reformulated in terms of an eigenvector structure derived from the matrices D and F. A related suboptimal algorithm is developed and compared with present algorithms using matrices of size 5, 6, 7, 8, 12, 15, 20, and 30. The new algorithm is most efficient in early iterations, suggesting its usefulness in determining a good starting permutation for other algorithms. Evaluation of any suboptimal algorithm for this problem is considered and a regression line developed to fit least cost for the matrices tried. The relationship between this problem and the Traveling Salesman problem is noted. (Author)

AD-783 698/4GA PC$5.00/MF$2.25
California Univ Berkeley Electronics Research Lab
FLEMING'S RANDOMIZED GAME AND HIS PARABOLIC PARTIAL DIFFERENTIAL EQUATION,
John M. Danskin. Apr 74, 156p Rept no. ERL-M450
Contract N00014-69-A-0200-1068

Descriptors: *Game theory, *Partial differential equations, Strategy, Inequalities, Potential theory, Theorems.
Identifiers: *Parabolic differential equations, Laplace equation, Lipschitz conditions, *Differential games.

Proceeding from first principles and making no use of existing partial differential equations (PDE) theory, the paper gives a direct and elementary proof that the value of Wendell Fleming's 1964 randomized mixed-strategy game exists and satisfies his parabolic PDE. Fleming required the terminal function to have Lipschitzian first and second partial derivatives; this paper requires only that the terminal function and its gradient be Lipschitzian. The solution is given a new representation, which allows precise Lipschitz and Holder estimates to be made. A trick of Fleming allows the deduction of a uniqueness and existence theorem for a class of parabolic equations with Laplacian operator under the lightened terminal conditions. (Author)

AD-783 699/2GA PC$3.25/MF$2.25
Control Analysis Corp Palo Alto Calif
SIMULATING STABLE STOCHASTIC SYSTEMS. V. COMPARISON OF RATIO ESTIMATORS.
Technical rept.,
Donald L. Iglehart. Jul 74, 33p Rept no. TR-86-14
Contract N00014-72-C-0086
See also Part 4, AD-771 474.

Descriptors: *Queueing theory, *Stochastic processes, *Simulation, *Estimates, Confidence limits, Sampling, Distribution functions, Mathematical models.
Identifiers: Parameter estimation, Jackknife method.

The regenerative method for estimating parameters in a simulation requires the simulator to estimate the ratio of two means. Five point estimates and four confidence intervals for this ratio have been computed for three stochastic simulations. The jackknife method appears to be the most promising for both point and interval estimation. (Author)

UCID-4671 PC$5.50/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
GAME TREES, M AND N MINIMAXING, AND THE M AND N ALPHA BETA PROCEDURE. ARTIFICIAL INTELLIGENCE GROUP REPORT NO. 3.
J. R. Slagle. 8 Nov 63, 49p

Descriptors: (*L codes, *Efficiency), Computer codes, Programming.

For abstract, see NSA 30 04, number 12087.

13. MECHANICAL, INDUSTRIAL, CIVIL, AND MARINE ENGINEERING

13A. Air Conditioning, Heating, Lighting, and Ventilating

AD-783 670/3GA PC$3.25/MF$2.25
Naval Research Lab Washington D C
ENHANCEMENT OF PULSED XE LAMPS IN THE 460-495 NM BANDWIDTH BY PULSE SHAPING.
Memorandum rept.,
Ronald G. Hughes. Jul 74, 42p

Descriptors: *Xenon lamps, *Underwater lights, Short pulses, Pulses, Deep depth, Photographic lighting systems, Flash lamps, Discharge lamps, Underwater photography, Deep water, Deep oceans.

The irradiance produced by a pulsed long arc Xe lamp in capacitive and single mesh driving circuits was investigated in the 400-600 nm bandwidth, which includes the optical attenuation minimum of deep sea water. An improvement of 50% in light output (radiance) was observed within the 460-495 nm bandwidth with the lamp in an optimized single mesh driving circuit as compared to the lamp in a capacitive driving circuit. External triggering was used to discharge 8200 joules of initially stored energy for both driving circuits. (Author)

BDX-613-927(Rev.) PC$4.00/MF$2.25
Bendix Corp., Kansas City, Mo.
DEVELOPMENT OF A SELF-CONTAINED LAMINATING FIXTURE.
J. D. Sheeley. May 74, 14p
Contract AT(29-1)-613

Descriptors: (*Autoclaves, *Bonding), (*Mylar, Bonding), Adhesives, Composite materials, Electric cables, Electronic circuits, Etching, Layers, Thermal cycling.

For abstract, see NSA 30 04, number 12149.

LA-UR-74-212 PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
PERFORMANCE TESTS OF GRAVITY-ASSIST HEAT PIPES WITH SCREEN-WICK STRUCTURES.
J. E. Kemme, J. E. Deverall, E. S. Keddy, J. R. Phillips, and W. A. Ranken. 1973, 17p CONF-740705-1

Descriptors: (*Heat pipes, *Performance testing), Design, Fabrication, Liquids, Sodium, Superheating, Vapors.

For abstract, see NSA 30 04, number 09423.

PATENT-3 229 759 Not available NTIS
Atomic Energy Commission, Washington, D.C.
EVAPORATION-CONDENSATION HEAT TRANSFER DEVICE.
Patent,
George M. Grover. Filed 2 Dec 63, patented 18 Jan 66, 5p PAT-APPL-327 559
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Heat exchangers, *Patents, Evaporators, Condensing, Capillarity.
Identifiers: PAT-CL-165-105.

The invention concerns a heat transfer device comprising a container having condenser and evaporator regions composed of niobium-1% zirconium alloy. The container encloses a condensable vapor consisting of lithium. A capillary means is included, covering the entire inner surface of the container except for a portion of the condensing region. The capillary means is capable of causing the transport of the condensed vapor from the cooler area of the container to the hotter area.

PATENT-3 732 412 Not available NTIS
Department of the Army Washington D C
METHOD AND SYSTEM FOR PERSONNEL CONTROL WITH BLINDING ILLUMINATION.
Patent,
Jesse F. Tyroler. Filed 13 Jun 72, patented 8 May 73, 5p Rept nos. PAT-APPL-262 405,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Patents, *Illumination, *Riot control, Searchlights, Floodlights, Optical filters, Goggles, High intensity, Low intensity.
Identifiers: PAT-CL-240-1-R.

The invention relates to a method and system for controlling unruly crowds of people by non-violent means, by using blinding illumination. The illumination includes a continuous low intensity light together with a high-intensity flashing light to temporarily, blind the human eye. Under these conditions, police equipped with optical filter means, e.g. goggles, which selectively cut out, and thereby protect their eyes against, the 'blinding' flashing light, can enter the crowd and remove individual agitators.

SLA-73-7082 PC$5.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
ELECTRIC HEATER DEVELOPMENT FOR A HIGH PERFORMANCE MACH NUMBER 14 WIND TUNNEL.
C. W. Peterson, J. F. Reed, and W. H. Curry. 37p CONF-740704-2

Descriptors: (*Heaters, *Performance testing), (*Wind tunnels, Heaters), Aerodynamics, Electric power, Mach number, Simulation.

For abstract, see NSA 30 04, number 12190.

13B. Civil Engineering

AD-783 529/1GA PC$6.00/MF$2.25
Naval Weapons Center China Lake Calif
SURVEY AND EVALUATION OF THE ENVIRONMENTAL IMPACT OF NAVAL WEAPONS CENTER ACTIVITIES.
Technical memo.,
James R. Ouimette. Jun 74, 235p Rept no. NWC-TM-2426

Descriptors: *Naval shore facilities, *Deserts, *Pollution, *California, Climate, Environments, Plants(Botany), Ecology, Wildlife, Land areas, Wilderness, Waste disposal, Pyrotechnics, Air pollution, Explosives, Hydrology, Public health, Noise pollution, Transportation, Inventory.
Identifiers: *Environmental impacts, *China Lake Naval Weapons Center, Land use, Ecosystems.

The report attempts to determine what cumulative effect a major Navy base and its associated community has had on a large land area in the fragile desert biome. The study is not an environmental impact statement; but estimates the impact of all current day-to-day actions at the Naval Weapons Center (NWC), China Lake, California. The report's three major sections give: A description of the environmental setting; an inventory of residuals that affect air, water, noise, etc.; and the methodology used to evaluate environmental impact on the ecosystem receptors in the NWC vicinity. (Modified author abstract)

AD-783 627/3GA PC$4.00/MF$2.25
Naval Ordnance Lab White Oak Md
LASER MEASUREMENT OF PAVEMENT SURFACE TEXTURES.
Final rept.,
S. Gee, and W. L. King, Jr. Mar 74, 82p Rept no. NOLTR-74-68 FHWA-RD-74-12

Descriptors: *Pavements, *Texture, *Gas lasers, Surface roughness, Measurement, Laser beams, Depolarization, Surface properties, Skids.
Identifiers: *Laser measurement.

A laboratory investigation was conducted into the feasibility of employing laser light depolarization as a measure of pavement surface textures. Pavement cores representing different conditions of wear were employed in the investigation, as were newly formed concrete slabs especially prepared for the tests. Results show that the laser technique is sensitive to the pavement textural characteristics. Comparison with independent frictional data and conventional textural data on the same samples indicates generally good correlation with the laser data. The conclusion is that the laser concept is feasible and offers a potentially attractive method for obtaining real-time measurements of pavement surface textures from a moving vehicle. (Modified author abstract)

AD-783 790/9GA PC$8.25/MF$2.25
Naval Postgraduate School Monterey Calif
AN EXAMINATION OF ALTERNATIVE METHODS FOR EMPLOYING BOOMS TO CONTAIN OIL SPILLS IN NAVY HARBORS.
Master's thesis,
Jerold Joseph Larson. Jun 74, 102p

Descriptors: *Oil spills, *Booms(Equipment), *Decision making, Efficiency, Cost effectiveness, Costs, Performance(Engineering), Water pollution, Theses.
Identifiers: *Oil pollution containment, Comparison, Evaluation, Utility, Oil retention booms, Benefit cost analysis.

A plan is formulated which enables a decision maker to determine the relative effectiveness of three methods for employing oil spill containment boom. The evaluation is based on a utility analysis of three defined methods for employing oil spill containment boom. A decision analysis technique is employed to determine the relative importance of parameters indicating the utility of each method for boom employment. The plan provides a means for balancing cost considerations against potential benefits. (Modified author abstract)

AD-783 828/7GA PC$4.75/MF$2.25
Air Force Aero Propulsion Lab Wright-Patterson AFB Ohio
AIRCRAFT EXHAUST POLLUTION AND ITS EFFECT ON THE U.S. AIR FORCE.
Technical rept.,
William S. Blazowski, and Robert E. Henderson. Aug 74, 134p Rept no. AFAPL-TR-74-64
Revision of report dated Nov 72, AD-753 095.

Descriptors: *Air pollution, *Aircraft engines, *Air Force, Reviews, Military requirements, Combustion chambers, Afterburning, Exhaust gases, Costs, Smoke, Nitrogen oxides, Hydrocarbons, Carbon monoxide.
Identifiers: *Aircraft exhaust, *Air pollution control, Air pollution standards, Jet engine exhaust.

The report presents information thought to be necessary in establishing an Air Force Policy on aircraft engine pollution. The reasons that different pollutants are emitted is discussed. Relevance of this problem to the Air Force is also investigated. Actions which may be taken to reduce pollutants are presented in terms of technology level: current, mid-term, and advanced technology. Operation, reliability and maintainability, implementation and cost impacts are evaluated for each of the technology levels. The EPA standards and possible use by the Air Force are discussed. Air Force goals, which differ from the EPA standards in method of specification, are developed. These goals will permit control technology application without influencing basic engine design parameters or performance. The cost to meet these goals is established for current AF systems. (Author)

AD-783 850/1GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
FURNACE FOR THERMAL TREATMENT OF LIQUID INDUSTRIAL WASTE WATERS CONTAINING TOXIC ORGANIC IMPURITIES (PECH DLYA TERMICHESKOGO OBEZVREZHIVANIYA ZHIDKIKH PROMYSHLENNYKH STOKOV S TOKSICHESKIMI ORGANICHESKIMI PRIMESYAMI),
V. I. Brazhnikov, and P. A. Tikhanovskii. 6 Sep 72, 5p Rept no. FSTC-HT-23-9-73
Trans. of Patent (USSR) 286 983, 1971.

Descriptors: *Incinerators, *Furnaces, Combustion, Sprays, Liquid wastes, Organic compounds, Translations, USSR, Engineering drawings, Patents.
Identifiers: *Liquid waste disposal, Industrial waste treatment.

The invention relates to furnaces for thermal treatment of industrial waste waters. A furnace for thermal treatments of industrial liquid waste with toxic organic impurities, consisting of vertical shaft with channels for introducing fuel and air, units for heating and atomizing industrial wastes, for cooling and removal of gaseous combustion products, is known. The effectiveness of the furnace is increased by installing units for separate introduction of fuel into the shaft and combustion units and by using additional combustion chambers, which form individual zones along the height of the furnace. Units for atomizing industrial waste waters, for example atomizers, are situated along the perimeter at different heights of the furnace shaft and the liquid being atomized is directed opposite to the gas stream at an angle to the vertical.

AD-783 924/4GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
PROBLEMS RELATING TO A SCIENTIFIC APPROACH TO 'AIR POLLUTION AND ITS EFFECT ON SANITATION AND PUBLIC HEALTH' IN THE RSFSR/RUSSIAN FEDERATION OF SOVIET SOCIALISTIC REPUBLICS,
C. Ya. Chikin, B. A. Somov, and G. D. Zhitnitskii. 24 Jul 74, 8p Rept no. FTD-HC-23-1691-74
Edited trans. of Gigiena i Sanitariya (USSR) n4 p52-55 Apr 73.

Descriptors: *Air pollution, Control, Sanitation, Public health, USSR, Translations.

Intensive industrial development without concomitant environmental protection measures may cause extensive air pollution and create a health hazard. One of the main problems facing the 24th Party Congress is to protect the health of the Soviet people.

CONF-740703-2 PC$4.75/MF$2.25
Oak Ridge National Lab., Tenn.
SPATIAL DISAGGREGATION: PREREQUISITE TO REGIONAL SIMULATION.
A. H. Voelker, M. M. McCarthy, M. L. Newman, R. C. Durfee, and S. L. Yaffee. 1974, 30p

Descriptors: (*Urban populations, *Regional analysis), (*Rural populations, Regional analysis), Geography, Maps, Population density, Population dynamics, Simulation, Spatial distribution.

For abstract, see NSA 30 04, number 12114.

COO-1199-32 PC$4.00/MF$2.25
Illinois State Water Survey, Urbana.
RESULTS FROM METROMEX.
S. A. Jr. Changnon, R. G. Semonin, and W. P. Lowry. 1972, 7p CONF-7210118-1
Contract AT(11-1)-1199

Descriptors: (*Air pollution, *Research programs), (*Atmospheric precipitations, Research programs), (*Weather, Research programs), (*Urban areas, Air pollution), Aerosols, Earth atmosphere, Industrial plants, Meteorology, Nonradioactive wastes, Stack disposal.

For abstract, see NSA 30 04, number 12095.

E74-10663 PC$6.25/MF$2.25
Maine Dept. of Transportation, Augusta. Bureau of Highways.
DEVELOP A LAND USE-PEAK RUNOFF CLASSIFICATION SYSTEM FOR HIGHWAY ENGINEERING PURPOSES.
Final rept. May 72-Mar 74,
Ernest G. Stoeckeler, Robert S. Farrell, and Raymond G. Woodman. 15 Mar 74, 61p NASA-CR-139037
Contract NAS5-21772
Original contains imagery. Original photography may be purchased from the EROS Data Center, 10th and Dakota Ave., Sioux Falls, S.D. 57198.

Descriptors: Land use, Hydrology, Highways, Maine, Water runoff, Earth resources program, Drainage, Watersheds, Floods.

The author has identified the following significant results. Based on the detail study of the Sunkhaze Stream Watershed, it is believed that good detailed drainage studies can be derived from repetitive ERTS imagery. Land use maps tailored to hydrologic study can be prepared from ERTS imagery. Significant changes in the Sunkhaze Stream and Otter Stream Watersheds at spring flood conditions have given important information on the causes for flooding in the town of Bradley.

JPRS-62555 PC$3.25/MF$2.25
Joint Publications Research Service, Arlington, Va.
TRANSLATIONS ON ENVIRONMENTAL QUALITY. NO. 44.
24 Jul 74, 46p
Trans. from various journals.

Descriptors: *Air pollution, *Water pollution, Ecology, Agriculture, Legislation, Fuel oil, Translations, Algeria, Ivory coast, Peru, Venezuela, Iran, Israel, USSR.

Contents:
- Algeria--Recommendations of environmental seminar;
- Ivory Coast--Minister of agriculture opens environmental conference;
- Peru--Minister speaks on environmental responsibilities;
- Ecology discussed in terms of Peruvian revolution;
- Venezuela--Agriculture ministry official: orange agent will not enter country;
- Iran--Senate approves environment legislation;
- Saleh urges creation of coast guards;
- Use of oil for fuel is to be prohibited in Teheran;
- Chalus River is polluted;
- Teheran air pollution;

Iran-USSR environmental agreement;
Israel--Diesel pollution crackdown set;
USSR--Conference on environmental preservation in Tiraspol';
Environmental abuses in Lithuanian SSR criticized;
Pollution of small rivers in Ukraine decried;
Toxic or poisonous waters.

KFK-1966-UF PC$12.25/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Angewandte Systemtechnik und Reaktorphysik.
ENERGY AND THE ENVIRONMENT IN BADEN--WUERTTEMBERG.
D. Faude, A. Bayer, G. Halbritter, G. Spannagel, and H. Stehfest. Apr 74, 183p
In German. U.S. Sales Only.

Descriptors: (*Fossil-fuel power plants, *Nonradioactive wastes), (*Rhine river, *Thermal pollution), (*Human populations, *Radiation doses), Air pollution, Contamination, Diffusion, Environment, German federal republic, Meteorology, Nuclear power plants, Radioactive wastes, Sulfur oxides, Thermal effluents, Water pollution.

For abstract, see NSA 30 05, number 12714.

ORNL-EIS-73-60(Vol.1)(No.5) PC$4.50/MF$2.25
Oak Ridge National Lab., Tenn.
NSF-RANN TRACE CONTAMINANTS ABSTRACTS.
E. D. Copenhaver. May 74, 26p
Contract W-7405-eng-26

Descriptors: (*Environment, *Pollution), Air pollution, Ecosystems, Health hazards, Human populations, Industrial plants, Nonradioactive wastes, Water pollution.

For abstract, see NSA 30 04, number 09575.

PATENT-3 779 385 Not available NTIS
Atomic Energy Commission, Washington, D.C.
APPARATUS FOR REMOVING OIL AND OTHER FLOATING CONTAMINANTS FROM A MOVING BODY OF WATER.
Patent,
John W. Strohecker. Filed 30 Nov 71, patented 18 Dec 73, 7p PAT-APPL-203 267
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Skimmers, *Patents, Water pollution, Booms(Equipment), Oils.
Identifiers: *Oil pollution removal, Oil spills, PAT-CL-210-154.

The patent describes a process in which floating contaminants such as oil and solid debris are removed from a moving body of water by employing a skimming system which uses the natural gravitational flow of the water. A boom diagonally positioned across the body of water diverts the floating contaminants over a floating weir and into a retention pond where an underflow weir is used to return contaminant-free water to the moving body of water. The floating weir is ballasted to maintain the contaminant-receiving opening therein slightly below the surface of the water during fluctuations in the water level for skimming the contaminants with minimal water removal.

PB-233 377/1GA PC$4.75/MF$2.25
Texas A and M Univ., College Station. Water Resources Inst.
DECISION ANALYSIS ON WATER RESOURCES PLANNING AND MANAGEMENT FOR AN ARID METROPOLITAN CENTER IN WEST TEXAS.
Technical rept.,
Joe H. Dean, and C. S. Shih. Oct 73, 14p TR-54 W74-09364, OWRR-B-102-TEX(1) Contract DI-14-31-0002-3652

Descriptors: *Water resources, *Statistical decision theory, Management planning, Bayes theorem, Computer programs, Theorems.
Identifiers: Sensitivity analysis.

Bayesian decision theory provides a procedure for the use of subjective data in decision-making situations related to urban water resource development. The procedure is effectual in pursuing a set of goals and transforming individual group indecisiveness into satisfactory decisions. The approach is highlighted due to its capability to incorporate seemingly unquantifiable, abstract factors into the decision-making process. It is realized that the soliciting of expert and general public opinion is indispensible in making choices for the welfare of the general public from alternative courses of action under uncertainties. The analysis presented considers engineering alternatives, quality, quantity, cost, and the intangible public response in an integrated effort for the selection of optimum strategies in urban water resource development.

PB-233 774/9GA PC$3.25/MF$2.25
Soil Conservation Service, Washington, D.C.
WSP2 - WATER SURFACE PROFILE PROGRAM, USER'S GUIDE,
R. E. Maclay. Nov 73, 39p USDA/DF-73/021a
For computer program, see PB-233 775.

Descriptors: *Flooding, *Computer programs, *Water flow, *Channel flow, Bridges(Structures), Subroutines, Topography, Mathematical models.
Identifiers: *Wsp2 computer program, Fortran 4 programming, language, *Water surface profiles, *Water bridge interactions.

The computer program Wsp2 aids in the determination of flood characteristics for a given set of physical conditions. It can compute water surface profiles in open channels. This job requires a large amount of physical data to be described such as valley shape, roughness, restrictions, etc. The program consists of a main program and 61 subprograms. With one exception it was written in Fortran 4 programming language and developed on an IBM 360/65 computer. Some agencies have adapted it to the Cdc and Univac computers. The program requires about 220k bytes of core storage. It also requires three temporary data files. Specific information about the data files is on comment cards at the beginning of the program listing.

PB-233 775/6GA Mag Tape $97.50;Foreign $122.50
Soil Conservation Service, Washington, D.C.
WSP2 - WATER SURFACE PROFILE PROGRAM,
R. E. Maclay. Nov 73, 1 reel mag tape USDA/DF-73/021
Specify tape recording mode desired: 7 track, 556 or 800bpi, Bcd, odd or even parity; or 9 track, 800bpi, Ebcdic, odd parity. Price includes User's Guide, PB-233 774.

Descriptors: *Software, *Water flow, *Computer programs, *Bridges(Structures), *Water bridge interaction, *Water surface profile program, Magnetic tapes, Channel flow, Topography, Mathematical models, Fortran 4 programming language.

The computer program Wsp2 aids in the determination of flood characteristics for a given set of physical conditions. More specifically it can compute water surface profiles in open channels. This job requires a large amount of physical data to be described such as valley shape, roughness, restrictions, etc. The program consists of a main program and 61 subprograms. Some agencies have adapted it to Cdc and Univac computers. The program requires about 220k bytes of core storage. It also requires three temporary data files. Specific information about the data files is on comments cards at the beginning of the program listing...Technical data: The program is written in Fortran 4 programming language for original implementation on the IBM 360/50 computer using the OS operating system.

PB-233 777/2GA Mag Tape $97.50;Foreign $122.50
Soil Conservation Service, Washington, D.C.
DAMS2, PROJECT FORMULATION - STRUCTURE SITE ANALYSIS,
R. E. Maclay. Nov 73, 1 reel mag tape USDA/DF-73/022
Specify tape recording mode desired: 7 track, 556 or 800bpi, Bcd, odd or even parity; or 9 track, 800bpi, Ebcdic, odd parity. Price includes User's Guide, PB-233 776.

Descriptors: *Software, *Dams, *Structural analysis, *Computer programs, *Fortran 4 programming language, *Storm volume.

The Dams2 computer program is used to evaluate site alternative combinations of dam storage volume, emergency spillway width, depth, and principal spillway capacity. Inputs include site storage characteristics and storm volume, frequency, duration, and distribution. The program uses the sites' storage-discharge capacities to floodroute inflow hydrographs through a potential reservoir. Storage and discharge capacity may be computed by the program or loaded as input data. Inflow hydrographs may be actual or developed from any storm rainfall distribution...Software technical description: Program written in Fortran 4 with selected routines coded in Alc.

PB-233 778/0GA PC$5.00/MF$2.25
Soil Conservation Service, Washington, D.C.
PROJECT FORMULATION - HYDROLOGY, COMPUTER PROGRAM USER'S MANUAL.
Technical release no. 20,
R. E. Maclay. 1965, 172p USDA/DF-73/020a
For computer program, see PB-233 779.

Descriptors: *Flood routing, *Computer programs, *Hydrology, Hydrography, Manuals, Watersheds, Data processing, Regional planning.
Identifiers: Tr 20 computer program, Storm flood routing.

The Tr-20 project formulation program is described which will flood route any frequency storm through various user-specified hydrologic networks. Detailed hydrographs and summary output reports may be optionally requested.

PB-233 779/8GA Mag Tape $97.50;Foreign $122.50
Soil Conservation Service, Washington, D.C.
PROJECT FORMULATION - HYDROLOGY, COMPUTER PROGRAM.
Technical release no. 20,
R. E. Maclay. 8 Jun 65, 1 reel mag tape USDA/DF-73/020
Specify tape recording mode desired: 7 track, 556 or 800bpi, Bcd, odd or even parity; or 9 track, 800bpi, Ebcdic, odd parity. Price includes User's Guide, PB-233 778.

Descriptors: *Software, *Computer programs, *Flooding, *Hydrology, *Storm flood routing, Magnetic tapes.

The Tr-20 project formulation program is designed to handle flood routes of any frequency storm through various user-specified hydrologic networks. Detailed hydrographs and summary output reports are optionally requested. The program computes surface runoff resulting from any synthetic or natural rainstorm. It will take into account conditions having a bearing on runoff and will route the flow through stream channels and reservoirs. It wil combine the routed hydrograph with those from other tributaries and print out the peak discharges, their time of occurence and the water surface elevation for each at any desired cross section or structure. In addition it will print out the coordinates of the routed hydrograph together with the corresponding elevation of each

if requested. The program provides for the continuous analyses of nine different storms over a watershed under present conditions, and with various combinations of land treatment floodwater-retarding structures and channel improvement. It will perform these routings through as many as 120 reaches and 60 structures in any one continuous run. It has been programmed so that other aspects of watershed planning can be added later...Software technical description: The program is written in Fortran 2 language for original implementation on an IBM 7090/7094 computer.

PB-233 780/6GA PC$3.00/MF$2.25
Soil Conservation Service, Washington, D.C.
ECON2 - PROJECT FORMULATION - ECONOMICS - COMPUTER PROGRAM USER'S GUIDE,
R. E. Maclay. 1973, 24p USDA/DF-73/019a
For computer program, see PB-233 781.

Descriptors: *Flooding, *Computer programs, *Mathematical models, *Damage assessment, Classifications, Evaluation, Floods, Statistical analysis, Computer programming, Manuals.
Identifiers: Econ2 computer program, Fortran 4 programming language, *Flood damage.

The Econ2 floodwater damage program will compute the average annual damages to crops, pasture, other agriculture, road and bridge, urban, etc., where floodwater damages can be related to flood depths or elevations. This is an adaptation of the latest version of the Central Technical Unit's economics program (Econ-2, dated 3/14/68) and is limited to (a) the frequency evaluation method (b) damages related to depth of flooding, and (c) a maximum of 10 flood events. The number of reaches may vary from 1 to 100 and a maximum of 120 cross sections per run. If it is necessary to use the historical evaluation or duration method, the IBM 360 Central Technical Unit program must be used.

PB-233 781/4GA
Mag Tape $97.50;Foreign $122.50
Soil Conservation Service, Washington, D.C.
ECON2 - PROJECT FORMULATION - ECONOMICS,
R. E. Maclay. 1973, 1 reel mag tape USDA/DF-73/019
Specify tape recording mode desired: 7 track, 556 or 800bpi, Bcd, odd or even parity; or 9 track, 800bpi, Ebcdic, odd parity. Price includes User's Guide, PB-233 780.

Descriptors: *Software, *Computer programs, *Damage assessment, *Flooding, *Flood damage, *Fortran 4 programming language, *Econ2 computer program, Magnetic tapes.

The Econ2 floodwater damage program will compute the average annual damages to crops and pasture, other agriculture, road and bridge, urban, etc., where floodwater damages can be related to flood depths or elevations. This is an adaptation of the latest version of the Central Technical Unit's Economics Program (Econ-2, dated 3/14/68) and is limited to (a) the frequency evaluation method (b) damages related to depth of flooding, and (c) a maximum of 10 flood events. The number of reaches may vary from 1 to 100 and a maximum of 120 cross sections per run. If it is necessary to use the historical evaluation of duration method, the IBM 360 Central Technical Unit program must be used...Technical data: The program is written Fortran 4, with some subroutines written in assembly language. The original program was written for implementation on an IBM 360 or 1130.

PB-234 048/7GA PC$3.00/MF$2.25
Oklahoma State Office of Community Affairs and Planning, Oklahoma City.
INDEX OF FREQUENTLY USED FUNDING SOURCES FOR LOCAL OFFICIALS.
Final rept.,
Chuck Smith. Dec 73, 15p OK-CAP-CA-73-122

Descriptors: *Urban planning, *Local government, *Grants, Indexes(Documentation).

The document is an index of commonly used grants and loans at the local level. There are twelve categories covering a wide spectrum of governmental functions. The project's format is a listing of from one to six frequently used grants under each category. Pertinent information, such as program description and contact personnel, is included.

PB-234 178/2GA PC-GPO/MF$2.25-NTIS
Eugene Water and Electric Board, Oreg.
A DEMONSTRATION OF THERMAL WATER UTILIZATION IN AGRICULTURE.
Environmental protection technology series,
James W. Berry, and Herman H. Miller, Jr. Apr 74, 264p* W74-10199, EPA-660/2-74-011
Grant EPA-S-802032
Paper copy available from GPO $2.80.

Descriptors: *Thermal pollution, *Waste water reuse, *Irrigation, *Frost protection, Heating, Farm crops, Industrial water, Cooling water, Soils, Damage, Agriculture.
Identifiers: *Water utilization, *Thermal water, Heated water, Beneficial use.

A five-year demonstration project was conducted to determine benefits and identify harmful effects of using waste heat in condenser cooling water (90F-110F) for agricultural purposes. Initial phases of the demonstration emphasized the use and evaluation of warm water for spring frost protection, irrigation, and plant cooling during summer. Various row crops and fruit and nut trees were included in the evaluation. Undersoil heating was demonstrated on a 1.2 acre soil plot. Conclusions indicate that the greatest potential benefit of waste heat use in agriculture is in the area of greenhouse soil heating.

PB-234 182/4GA PC-GPO/MF$2.25-NTIS
Oregon State Univ., Corvallis. Dept. of Agricultural Engineering.
ODORS FROM CONFINED LIVESTOCK PRODUCTION. A STATE-OF-THE-ART.
Environmental protection technology series,
J. Ronald Miner. Apr 74, 130p EPA-660/2-74-023, W74-10188
Contract EPA-R-802009
Paper copy available from GPO $1.70.

Descriptors: *Air pollution, *Odor control, *Livestock, *Agricultural wastes, Solid waste disposal, Cattle, Swine, Poultry, Hydrogen sulfide, Ammonia, Thiols, Amines, Organic acids, Decomposition, Drainage, Anaerobic processes, Handling equipment, Storage, Masking, Chemical reactions, Waste treatment.
Identifiers: Manure, Feedlot wastes.

Current livestock production techniques result in the generation of odors which have become a source of conflict between livestock producers and society. Research to identify the chemical compounds present in odorous air from animal waste degradation has yielded about 45 compounds to date. The amines, mercaptans, organic acids and heterocyclic nitrogen compounds are generally regarded as being of greatest importance. Among the techniques for odor control are: (a) site selection away from populated areas and where adequate drainage exists, (b) maintain the animal areas as dry as possible and prevent the animals from becoming manure covered, (c) select manure handling systems which utilize aerobic environments for manure storage, (d) maintain an orderly operation free of accumulated manure and runoff water, (e) practice prompt disposal of dead animals and (f) use odor control chemicals when short term odor control is necessary, such as when manure storage tank contents must be field spread.

PB-234 204/6GA PC$4.00/MF$2.25
RAPIDEX, Inc., Peabody, Mass.
THE DEVELOPMENT OF A CONTINUOUS DRILL AND BLAST TUNNELING CONCEPT. PHASE II.
Final rept. 13 Apr 73-14 Feb 74,
Carl R. Peterson. May 74, 83p* DOT-TSC-OST-74-10
Contract DOT-TSC-611
See also AD-757 114.

Descriptors: *Tunneling(Excavation), Automation, Blasting, Drilling, Drilling machines, Excavating equipment, Face preparation(Mining), Explosives.
Identifiers: *Rapid excavation, *Continuous drilling and blasting.

A spiral drilling pattern is described which offers high efficiency drill and blast tunneling via frequent small blasts rather than occasional large blasts. Design work is presented for a machine which would stay at the face to provide essentially continuous drilling, loading, blasting, and mucking. Field tests provide the concept are described and photos of the spiral tunnel advance are provided. Successful testing of a suitable blast shield is also described and photos provided. Advance rates of four times conventional drill and blast practice are projected at about half the conventional cost per foot.

PB-234 223/6GA PC$5.00/MF$2.25
Integrated Systems, Inc., Chevy Chase, Md.
PREDICTION OF LONG-TERM STRESS RANGES USER'S MANUAL-STRESS HISTOGRAM PREDICTION SYSTEM (SYSGEN/HISGEN).
Final rept.,
J. W. Fothergill, H. Y. Lee, and P. A. Fothergill.
Jun 73, 163p* FHWA-RD-73-45
Contract DOT-FH-11-7904

Descriptors: *Highway bridges, *Computer programs, User needs, Stresses, Vehicular traffic, Transportation models, Stress cycles, Histograms.
Identifiers: SYSGEN computer programs, HISGEN computer program.

The development of a computer simulation program system for generating highway traffic crossing a bridge and calculating the resulting stresses and stress ranges is described. The total system consists of four stand-alone programs which can be used either independently or as a dependent series where output from one program is used as input to the next. Output consists of loading and stress range histograms. A description of two computer programs which operate as a system with BRGSTRS (Report FHWA-RD-73-44) is given. The first, SYNGEN, generates single axle loads for the BRGSTRS program, which in turn generates a stress signature curve for each axle load. The second, HISGEN, generates long-term stress range histograms from the single axle stress trace. Included are utilization and data preparation instructions and a sample case.

PB-234 235/0GA PC$3.00/MF$2.25
Oklahoma State Office of Community Affairs and Planning, Oklahoma City
A REPORT ON THE NEEDS OF LOCAL GOVERNMENT. A REPORT BY THE COUNCIL ON COMMUNITY AFFAIRS TO THE GOVERNOR AND THE LEGISLATURE, 1974.
Final rept.
5 Feb 74, 20p OK-CAP-AD-74-138

Descriptors: *Urban planning, *Local government, *Oklahoma, Community needs, Legislation, State government.

The report was prepared to meet the responsibility of the Council on Community Affairs to advise the Governor and Legislature on the improvement of local government in Oklahoma. It discusses some of the key problems facing local government, briefly analyzes some of the fiscal dilemmas, and discusses some alternative means of addressing major problems of local government.

PB-234 257/4GA PC$8.00/MF$2.25
Texas Transportation Inst., College Station.
TEST AND EVALUATION OF EARTH BERM MEDIAN BARRIER.
Final rept.,
T. J. Hirsch, and E. L. Marquis. Feb 73, 96p
FHWA-RD-74-21
Contract FH-11-7840

Descriptors: *Divided highways, *Medians(Dividers), *Barriers, Accident prevention, Motor vehicles, Collision avoidance, Safe handling, Field tests, Texas.

The purpose of this report is to present test data and evaluation of a median barrier earth berm design developed with the aid of a powerful existing predictive tool. A series of full scale tests have been conducted on the berm design. The data for all tests has been reduced and selected results compared to the highly sophisticated computer model.

PB-234 323/4GA PC$3.75/MF$2.25
Washington Univ., Seattle. Dept. of Civil Engineering.
FLUSHING AND WATER QUALITY CHARACTERISTICS OF SMALL-BOAT MARINAS.
Project completion rept. 1 Jul 73-30 Jun 74,
Ronald E. Nece, and Charles R. Knoll. Jun 74, 65p W74-10419, OWRR-A-064-WASH(2)
Contract DI-14-31-0001-4048
Charles W. Harris Hydraulics Lab. Technical rept. no. 40.

Descriptors: *Water pollution, *Marinas, Tidal currents, Water quality, Sampling, Dissolved gases, Oxygen, Nitrogen inorganic compounds, Chlorophylls, Hydraulic models, pH, Biomass, Salinity, Fresh water.
Identifiers: *Water quality data, *Dissolved oxygen.

Tide induced circulation patterns and gross flushing characteristics of two small-boat marinas are compared with field observations of currents and water quality within the marinas. Both marinas had comparable geometries, gross flushing characteristics, and water quality. There was not sufficient difference between the two marinas studied to verify how well small-scale hydraulic models may be used as predictors of overall quality within a particular marina. Water quality parameters sampled and reported for the period June-September, 1973, are temperature, dissolved oxygen, nitrate, pH, and chlorophyll a, the latter used as an index of total biomass in the water column. Comparable data were taken at a lake marina, for comparison between salt and fresh water environments.

PB-234 328/3GA PC$5.00/MF$2.25
Washington State Univ., Pullman. Highway Research Section.
STUDDED TIRE PAVEMENT WEAR REDUCTION AND REPAIR. PHASE III. COMPOSITE PRESENTATION OF PHASE I AND PHASE II RESULTS AND EXTRAPOLATION OF THE CONCLUSIONS TO REAL WORLD CONDITIONS.
Final rept. 1 Jul 73-1 Mar 74,
Harold C. Sorenson, Milan Krukar, and John C. Cook. 31 Dec 73, 161p Pub-H-41
See also PB-229 896.

Descriptors: *Pavements, *Wear resistance, *Tires, Regression analysis, Studs, Treads, Skid resistance, Surface properties, Flexible pavements, Portland cements, Surface finishing.
Identifiers: *Studded tires.

The report presents results obtained from the analyses of data which were collected during the performance of Phase I and Phase II of this project. Regression analyses were performed in order to relate various factors to each other. The factors used included stud type, stud protrusion, speed, air temperature, pavement temperature, environmental conditions, stud hardness and tire tread depth. The purpose was to evaluate the relative importance of these factors on pavement wear. It was found that the type of overlay, the type of stud and the stud protrusion length were the most important factors affecting pavement wear under WSU Test Track conditions. The other factors could not be sufficiently isolated to determine their relative importance. Average wear rates were calculated for the different types of pavements and overlays caused by the different stud types. A formula was developed which can be used to calculate pavement life under certain conditions.

PB-234 409/1GA PC$4.00/MF$2.25
Kalamazoo Metropolitan County Planning Commission, Mich.
APARTMENT DEVELOPMENT, KALAMAZOO COUNTY, MICHIGAN 1974,
Dean J. Holub. Jun 74, 76p

Descriptors: *Urban planning, *Apartment buildings, *Regional development, Housing market analysis, Revenue, Housing characteristics, Urban development, Residential buildings, Michigan.
Identifiers: *Kalamazoo County(Michigan).

Apartment development has captured an increasing amount of new residential construction, particularly over the last ten years in Kalamazoo County. Due to the significant impact that this recent apartment development has had on the overall residential make-up of Kalamazoo County, a County-wide study was deemed necessary to document the existing conditions. This report attempts to assess the current apartment situation in Kalamazoo County by providing a thorough inventory and analysis of apartment development in Kalamazoo County from 1950-1973. Moreover, in addition to examining the impact of the apartment development trend on the local housing market, the report also includes a discussion regarding apartment residents, factors influencing the apartment boom, local tax revenues, alternative multiple family housing, and concludes with projections for apartment units through 1982.

PB-234 425/7GA PC$4.00/MF$2.25
Minnesota Univ., St. Paul. Agricultural Extension Service.
ECONOMICS OF LAND USE REGULATIONS IN FLOOD HAZARD AREAS,
Alan R. Hopeman. Aug 73, 10p W74-10529, OWRR-B-054-MINN(3)
Contract DI-14-31-0001-3601

Descriptors: *Flood plains, *Land use, *Cost engineering, Regulations, Hazards, Economic analysis, Proposals, Structures, Management planning, Minnesota River, Minnesota.

To put flood plain lands to their wisest use, a balanced governmental approach is required. Controls are needed so flood plain land is not used in ways that impose external costs on upstream or downstream users. Institutional modifications are needed to induce flood plain occupants to consider the social costs of their locations. Where institutional modifications are unfeasible or inadequate, further regulation is in order. Aggressive information dissemination should inform flood plain purchasers about flood hazards. Regulation may be necessary so prospective purchasers are not at the mercy of unscrupulous or uninformed developers. Structural measures may be warranted in some areas. Other land use should be redirected to nonhazardous locations.

PB-234 430/7GA PC$3.00/MF$2.25
Mississippi State Univ., State College. Water Resources Research Inst.
RECONNAISSANCE OF THE FLUSHING CHARACTERISTICS AND WATER QUALITY IN COASTAL CANALS OF THE GULF OF MEXICO,
Oscar L. Paulson, Jr., George F. Pessoney, Larry Massey, and Danny Weaver. Jul 74, 25p W74-10531, OWRR-A-078-MISS(1)

Descriptors: *Water pollution, *Canals, *Mexico Gulf, Construction, Water quality, Dissolved gases, Oxygen, Degradation, Aquatic animals, Aquatic plants, Sampling, Coasts, Florida, Texas, Mississippi, Pass Christian Isles.
Identifiers: *Water quality data.

The construction of residential canals, many of which are dead-end canals, in a coastal strip along the Gulf of Mexico has been the subject of great concern by regulatory agencies in the United States. The major concern is that construction of these canals may lead to degradation of water quality to the point where they are void of plant and animal life or that such developments result in the destruction of valuable nursery grounds for a number of organisms in the food chain of aquatic life. Discussions with numerous regulatory agencies in Florida, Texas, and Mississippi and the results of sampling during this investigation indicate that unfavorable conditions may develop because of the manner in which residential canals are constructed.

PB-234 436/4GA PC$4.50/MF$2.25
Richmond Regional Planning District Commission, Va.
ADVANCING COOPERATIVE MUNICIPAL SERVICES IN THE RICHMOND REGION.
Final rept.
27 Jun 74, 105p
Prepared by McKinsey and Co., Inc., Washington, D.C.

Descriptors: *Regional planning, *Municipal services, *Virginia, Land use, Transportation, Parks, Sewers, Water supply, Flood control, Community facilities.
Identifiers: *Richmond(Virginia).

The report evaluates the feasibility of creating a service district for cooperative service delivery in the Richmond area. The jurisdictions considered in the evaluation were the City of Richmond and the Counties of Charles City, Chesterfield, Hanover, Henrico, New Kent, Goochland and Powhatan. The report concludes that: (1) The regional cooperative delivery of services is desirable in terms of both economic and noneconomic benefits; (2) The formation of a service district in the region is unattainable at this time; and (3) RRPDC should pursue an alternate approach to cooperative service delivery to demonstrate the benefits of and to dissipate the concerns about such an arrangement.

PB-234 443/0GA PC-GPO/MF$2.25
Environmental Protection Agency, College, Alaska. Arctic Environmental Research Lab.
LOW WINTER DISSOLVED OXYGEN IN SOME ALASKAN RIVERS.
Ecological research series,
Eldor W. Schallock, and Frederick B. Lotspeich. Apr 74, 40p EPA-660/3-74-008
Paper copy available from GPO $0.85.

Descriptors: *Stream pollution, *Alaska, Oxygen, Dissolved gases, Sampling, pH, Alkalinity, Conductivity, Temperature, Water quality, Winter, Chena River, Chatanika River, Salcha River, Yukon River.
Identifiers: *Dissolved oxygen, Water quality data.

Water samples collected during the years 1969 through 1972, from 36 selected Alaskan rivers were analyzed for dissolved oxygen, pH, conductivity and alkalinity. Dissolved oxygen (D.O.) ranged from 0.0 to 15.3 ml/l (106 percent saturation); pH from 6.2 to 8.4; conductivity varied from 105 to 3000 (umho/cm); and alkalinity from 28 to 410 (mg/l). Severe D.O. depletion during winter was found in many river systems large and small, and located in a range of latitudes (70 degrees N to 61 degrees N). Sufficient data were collected on the Chena, Chatanika, and Salcha Rivers to reveal annual D.O. trends. The depressed winter D.O. concentrations and low winter discharge in many

Alaskan rivers are more severe and widespread than present literature indicates. Winter conditions may already limit aquatic organisms in some systems.

PB-234 495/0GA PC-GPO/MF$2.25-NTIS
Wisconsin Univ., Madison. Dept. of Food Science.
WASTEWATER ABATEMENT IN CANNING VEGETABLES BY IQB BLANCHING.
Environmental protection technology series,
Daryl B. Lund. Apr 74, 87p EPA-660/2-74-006, W74-10545
Grant EPA-S-801484
Paper copy also available from GPO PC$1.25.

Descriptors: *Water pollution control, *Industrial wastes, *Canneries, Vegetables, Waste water, Food processing, Heating, Drying, Contaminants, Evaluation.
Identifiers: *Blanching, Individual quick blanching, Water pollution abatement.

A study on the efficacy of a new blanching system, Individual Quick Blanch (IQB), as applied to vegetables prior to canning was conducted. Peas, corn, lima beans, green beans, potatoes, carrots and beets were adequately blanched by IQB. Compared to deep bed steam blanching or pipe blanching, IQB generally resulted in a significant reduction in effluent. Slight drying of the vegetables before IQB reduced effluent even more; however, product quality was adversely affected in most cases. It was demonstrated that the IQB process can significantly reduce effluent volume and BOD generation in the blanching operation while adequately fulfilling the objectives of blanching. Recommendations for commercial development of IQB are given.

PB-234 496/8GA PC$5.50/MF$2.25
Curran Associates, Inc., Northampton, Mass.
A PRELIMINARY ASSESSMENT OF WET SYSTEMS FOR RESIDENTIAL REFUSE COLLECTION.
Final rept.,
P. M. Meier, J. Kuhner, and C. J. Martel. Jul 74, 179p* EPA-670/2-74-065
Contract EPA-68-03-0183

Descriptors: *Solid waste disposal, *Refuse disposal, Pipeline transportation, Sanitary sewers, Sewage treatment, Combined sewers, Collection, Hydraulics, Grinders, Economic analysis, Cost analysis, Process charting, Flow charting, Metals, Glass, Anaerobic digestion, Methane, Carbage disposal, Slurries.
Identifiers: Hydraulic transportation, *Household refuse grinders.

The most promising wet system alternative is identified as a system using individual household grinders in low density areas, vacuum collection and neighborhood grinders in high density areas, dilute slurry transport of ground refuse in the existing sanitary sewer systems, and joint treatment of refuse and sewage at an expanded treatment facility that includes anaerobic digestion for methane generation. However, the economic feasibility of even the most promising alternative is doubtful because of the high cost of grinding, and hydraulic transport of ground refuse in existing sewer systems may be feasible only if both metals and glass are excluded. A conventional collection of the nongrindable and bulky constituents of residential refuse will still be needed, albeit of a diminished frequency. (Modified author abstract)

PB-234 497/6GA PC$3.75/MF$2.25
Curran Associates, Inc., Northampton, Mass.
MODIFICATIONS TO THE EXECUTIVE COMPUTER PROGRAM FOR STEADY-STATE SIMULATION OF WASTEWATER TREATMENT FACILITIES.
Final rept.,
P. M. Meier, and G. R. Fisette. Jul 74, 70p* EPA-670/2-74-066
Contract EPA-68-03-0183

Descriptors: *Sewage treatment, *Refuse disposal, *Computer programs, *Solid waste disposal, Collection, Sanitary sewers, Pipeline transportation, Hydraulics, Grinders, Economic analysis, Flow charting, Mathematical models, Computerized simulation, Slurries.
Identifiers: Hydraulic transportation, Household refuse grinders.

This report is documentation of an extended version of the executive computer program for the steady-state simulation of wastewater treatment facilities originally developed by Smith and Eilers of the EPA National Environmental Research Center in Cincinnati, Ohio. The program was developed as part of a technical and economic assessment of wet systems for residential refuse collection. This research includes an evaluation of the feasibility of joint treatment of sewage and ground refuse at modified wastewater treatment facilities, a task approached by development and application of the treatment simulation model described in this report. New subroutines were developed by the authors for a number of preliminary and sludge handling processes, and some of the mathematical models of advanced waste treatment processes developed by other EPA contracts were adapted for inclusion into the revised executive program. (Modified author abstract)

PB-234 498/4GA PC$4.00/MF$2.25
Curran Associates, Inc., Northampton, Mass.
ECONOMIC ANALYSIS OF THE PROCESSING AND DISPOSAL OF REFUSE SLUDGES.
Final rept.,
P. Kos, P. M. Meier, and J. M. Joyce. Jul 74, 85p EPA-670/2-74-037
Contract EPA-68-03-0183

Descriptors: *Sewage treatment, *Refuse disposal, *Sludge disposal, *Garbage disposal, Collection, Sanitary sewers, Pipeline transportation, Combined sewers, Hydraulics, Grinders, Economic analysis, Computerized simulation, Cost analysis, Vacuum filtration, Anaerobic processes, Process charting, Methane, Sludge digestion, Reclamation, Mathematical models, Solid waste disposal, Slurries.
Identifiers: Hydraulic transportation, Household refuse grinders, Sanitary landfills, Waste recycling.

This is the second in a series of technical reports evaluating the economic and technical feasibility of wet systems for residential refuse collection. The major focus of this report is the economic and technical feasibility of sludge handling and disposal at wastewater treatment facilities modified to accept up to 0.5 percent by weight of ground residential refuse in their sewage influents. Using computer simulation techniques, the sensitivity of sludge handling and disposal operations to operating parameters and input conditions is examined. A substantial decrease in the unit cost of sludge handling (on a per ton of dry solids basis) over plants treating sewage alone can be expected, and suitable process chains include gravity thickening, vacuum filtration and either landfill or incineration. Energy recovery by way of anaerobic digestion is also considered.

PB-234 499/2GA PC$5.75/MF$2.25
Curran Associates, Inc., Northampton, Mass.
WET SYSTEMS FOR RESIDENTIAL REFUSE COLLECTION: A CASE STUDY FOR SPRINGFIELD, MASSACHUSETTS.
Final rept.,
P. M. Meier, J. Kuhner, and R. E. Bolton. Jul 74, 220p* EPA-670/2-74-038
Contract EPA-68-03-0183

Descriptors: *Solid waste disposal, *Refuse disposal, *Massachusetts, Pipeline transportation, Sanitary sewers, Sewage treatment, Hydraulics, Grinders, Economic analysis, Cost analysis, Collection, Demography, Mathematical models, Combined sewers, Process charting, Flow charting, Taxes, Feasibility, Slurries, Garbage disposal, Urban planning.
Identifiers: Hydraulic transportation, Household refuse grinders, Waste transfer stations, Springfield(Massachusetts).

This is the third in a series of technical reports evaluating the economic and technical feasibility of wet systems for residential refuse collection. The major focus of this report is a documentation of a case study implementation of the wet systems concept in the Springfield, Massachusetts, urbanized area. Included are detailed analyses of the problems of hydraulic transport of ground refuse in the Springfield sewer system, treatment of a modified wastewater treatment plant; the impact on resource recovery and conventional solid waste management; socioeconomic, institutional and fiscal ramifications; and a total systems cost analysis that shows annual per household costs for refuse and sewage management. An analysis of a household refuse grinder in terms of a domestic appliance is presented.

PB-234 611/2GA PC$11.00/MF$2.25
Albuquerque Urban Observatory, N. Mex.
STUDY OF CHARGE FINANCING.
Final rept.,
Gerald J. Boyle. Jan 73, 160p UO-LCCM-ALB-73-003, ALBU-14
Contract HUD-H-987

Descriptors: *Urban planning, *Local government, *Financial management, *New Mexico, Policies, Revenue, Services, Estimates, Financial planning, Parks, Recreational facilities, Public works, Public health.
Identifiers: *Charge financing, *Albuquerque(New Mexico).

The study evaluates the prospects for more extensive use of service charges by the City of Albuquerque to meet the needs of additional revenues. Charge financing is defined as 'amounts received (by governments) from the public for the performance of specific services benefitting the person charged...' Thus, only those directly using the service are charged for its use. The selection of services and rate determinations are analyzed in terms of economic efficiency, practicability and political acceptability. Those services deemed most appropriate for charge financing are analyzed in depth and recommendations are made for implementing new or higher service charges.

PB-234 627/8GA PC$5.00/MF$2.25
Iowa State Water Resources Research Inst., Ames.
RATIONAL INSTITUTIONAL ARRANGEMENTS FOR WATER RESOURCES MANAGEMENT.
Completion rept.,
N. William Hines, and Jamison P. Smith. 1 Oct 73, 153p ISWRRI-50 W74-10901, OWRR-A-033-IA(1)
Contract DI-14-31-0001-3815, DI-14-0001-3515

Descriptors: *Water resources, *River basin development, *Local government, *State government, Management, Organizations, Water law, Intergovernmental relationships, Boundaries, Land use, Regulations, Ground water, Water quality, Flood control, Drainage, Streams.
Identifiers: *Institutions, Interstate commissions, Water districts.

The types of state water management agencies at the state and local level and the functions of these agencies are examined. The problems of water resource management at the local level are examined. River basin mangement is explored by studying the problems of existing river basin agencies which result from the lack of a comprehensive, coordinated national plan. The strengths and weaknesses of past attempts at comprehensive river basin mangement are evaluated. Alternative state institutional arrangements discussed include the consolidation of existing state agencies into an 'environmental superdepartment,' the addition of a state coordination council to the existing arrangement, and the formation of a state depart-

ment of natural resources with a division of water resource managment.

PB-234 668/2GA PC$3.75/MF$2.25
Simpson and Curtin, Philadelphia, Pa.
MANUAL OF TRANSIT OPERATIONS IN CIVIL EMERGENCIES.
Apr 74, 65p SIMCUR-29911-4 UMTA-PA-06-0028-74-1

Descriptors: *Transportation, *Emergency preparedness, *Urban areas, *Disaster services, Transit buses, Emergency planning, Disaster planning, Government policies, Floods, Pennsylvania.
Identifiers: *Wilkes-Barre(Pennsylvania), Contingency planning.

A case study of transit service in Wilkes-Barre, Pa., following the Hurricane Agnes flood of June 1972, reveals the need for improved nationwide transit disaster procedures. All phases of planning for transit support in civil emergencies require upgrading by Federal, state and local governments. This manual describes the actions necessary to accomplish contingency planning, emergency transit evacuation and relief services in a systematic manner. Recommendations are offered. These include the following: Federal efforts to focus on incorporating disaster preparedness for capital grants; states to avail themselves of Federal matching funds for disaster planning with the state department of transportation or highway department responsible for transit planning input; etc. Chapters discuss Federal, state and local emergency frameworks and emergency transit operations preparedness procedures.

PB-234 710/2GA PC$8.00/MF$2.25
Georgia Dept. of Transportation, Atlanta. Research and Development Bureau.
HIGHWAY LITTER IN GEORGIA.
Final rept.,
Richard A. Graves, III, and Robert E. Bowling.
Jan 74, 97p

Descriptors: *Highways, *Refuse disposal, Surveys, Regression analysis, Recreational facilities, Vehicular traffic, Questionnaires, Seasonal variations, Local government, Budgeting, Maintenance, Georgia.
Identifiers: *Highway litter.

An analysis of highway litter in Georgia was made to determine the volume and composition along Georgia's highways and how it is affected by the factors of average annual daily traffic,(A.A.D.T), geographic region, functional highway classification, and season of the year. The volume and composition of highway litter in the vicinity of recreation areas and high traffic generators was also studied. A questionnaire was developed and sent to other states for studying successful litter collection and prevention programs. Using regression analysis, predictive equations were developed for each field division of the state and season of the year for correlating A.A.D.T with litter volume and pieces of litter. Results of the analysis of variance showed that the factors of A.A.D.T., geographical region, functional classification and season of the year was significant on most categories of litter.

PB-234 713/6GA PC$10.50/MF$2.25
Applied Management Sciences, Inc., Silver Spring, Md.
MEMPHIS' MUNICIPAL SOLID WASTE MANAGEMENT SYSTEM: A CASE STUDY.
Final rept.
1973, 146p EPA-SW-530-77c
Contract EPA-68-03-0041

Descriptors: *Solid waste disposal, *Urban planning, *Tennessee, Earth fills, Demography, Local government, State government, Federal government, Refuse, Leaves(Botany), Collection, Trucks, Labor relations, Cost analysis, Cost estimates, Incinerators, Garbage, Legislation.
Identifiers: Sanitary landfills, Waste transfer stations, Memphis(Tennessee).

This study examines the solid waste collection and disposal system in Memphis, Tennessee. The background of the system, including location, geography, demography, climate, form of government, and the solid waste management agencies is described, and the characteristics of the system, including the services, equipment, and finances are discussed.

PB-234 723/5GA PC$10.50/MF$2.25
Milwaukee Urban Observatory, Wis.
TOWARD HOUSING AND COMMUNITY DEVELOPMENT POLICY FOR MILWAUKEE.
Final rept.,
Sammis B. White. Jun 74, 150p UO-LCCM-MIL-74-016
Contract HUD-H-987

Descriptors: *Urban planning, *Housing studies, *Community projects, *Wisconsin, Policies, Projects, Local government, Planning.
Identifiers: *Milwaukee(Wisconsin).

The report reviews the development of a national work program and methodology constructed in the fall of 1972 and modified, locally, in early 1973. It presents a process that revolves around a planning approach that requires the development of goals, objectives, and the listing and review of alternative strategies and programs. The process contains essentially eight steps. Two Milwaukee housing problems and five more general local problems are identified, quantified, and then used to illustrate the process.

PB-234 737/5GA PC$3.75/MF$2.25
Gilman (W.C.) and Co., New York.
A TRANSIT IMPROVEMENT PLAN FOR THE CITY OF MERIDIAN, MISSISSIPPI.
Technical study.
Jun 74, 57p UMTA-MS-09-0005-74-1

Descriptors: *Urban transportation, *Urban planning, Management, Transit companies, Revenue, Services, Operating costs, Surveys, Transit riders.
Identifiers: *Meridian(Mississippi).

The purposes of the study were: to evaluate the transit operation, make recommendations for service improvements, and identify financial needs (both operating and capital) in the short-term future; and to examine alternative transit ownership and management options available to the city. The first phase of the study was designed to evaluate transit requirements for the next 5 year period and develop appropriate service improvements. The thrust of this phase was to analyze the operation of the Meridian City Lines, including financial status, maintenance facilities, equipment requirements, and bus routes and schedules. The second phase was directed to the future ownership and operation of the bus company. The main segments of the report deal with the aspects of existing transit operations such as fares, public attitude surveys, the immediate action program, public involvement and program development.

PB-234 784/7GA PC$3.75/MF$2.25
Tennessee State Planning Office, Nashville.
COMMUNITY FACILITIES PLAN, RIPLEY, TENNESSEE.
Final rept.
May 74, 74p TN-RIPY-74-1017

Descriptors: *Urban planning, *Community facilities, *Tennessee, Water supplies, Sewage, Recommendations, Standards.
Identifiers: *Ripley(Tennessee).

The Ripley Community Facilities Plan has been prepared to improve and assure the availability and delivery of public services and community facilities to all the citizens of the town. In the plan the existing facilities are discussed, with deficiencies being identified based on suggested standards. Recommendations for the improvement, modification and/or relocation of required public facilities to meet the projected population demands of 1994 are then provided.

PB-234 836/5GA PC$11.25/MF$2.25
Erie County Dept. of Planning, Buffalo, N. Y.
ERIE COUNTY INDUSTRIAL LAND USE PLAN.
Technical rept.
2 May 74, 162p
Contract HUD-C-53577
Prepared by Candeub, Fleissig and Associates, Newark, N. J.

Descriptors: *Regional planning, *Industries, *Land use, *New York, Sites, Benefit cost analysis, Standards, Environmental issues.
Identifiers: *Erie County(New York).

The report summarized findings and presents detailed factor and cost-benefit analyses regarding an industrial development plan for Erie County, N. Y. Selected site areas are located in industrial corridors in the County. A detailed appendix is included and contains a bibliography and list of persons interviewed.

PB-234 845/6GA PC$3.75/MF$2.25
Little (Arthur D.), Inc., Cambridge, Mass.
ECONOMIC ANALYSIS OF EFFLUENT GUIDELINES--FLAT GLASS INDUSTRY.
Final rept.,
William Lee. Aug 74, 72p* EPA-230/2-74-013
Contract EPA-68-01-1541

Descriptors: *Water pollution control, *Glass industry, Standards, Operating Costs, Fixed investment, Prices, Capital, Profits, Balance of payments, Maintenance, Economic analysis.
Identifiers: Flatglass industry, *Water pollution economics.

The study supplies the Environmental Protection Agency with an analytical framework for determining the economic impact of water pollution control requirements and water effluent standards upon the flat glass industry. The industry was segmented into sectors; Sheet Glass (SIC 3211), Plate Glass (SIC 3211), Float Glass (SIC 3211), Laminated Glass (SIC 3231), and Tempered Glass (SIC 3211). There were no plant closings, and the expected price increase for BPT (Best Practical Technology) is less than 0.1% and less than 0.3% for BAT (Best Available Technology). The expected capital investment required for pollution control be $1,133,000 for BPT, $5166,000 for BAT. The expected annualized cost including operating, maintenance, and capitalization of the investment will be $447,000 for BPT and $1,409,000 for BAT.

PB-234 849/8GA PC$7.75/MF$2.25
Denver Urban Observatory, Colo.
CITY IMAGE. PERCEPTION OF THE DENVER URBAN AREA.
Final rept.,
Steven H. Cohen. 1973, 94p UO-LCCM-DEN-73-010
Contract HUD-H-987

Descriptors: *Urban planning, *Colorado, Interviews, Residential buildings, Streets, Recreational facilities, Commercial buildings.
Identifiers: *Denver(Colorado).

Using interviews in eight Denver neighborhoods, this study attempts to develop a relatively inexpensive and rapid method for measuring perception of the Denver urban scene (housing, landmarks, street patterns, shopping, and recreation availability). Perceptual differences between citizens in the different neighborhoods and of different socio-economic background were compared.

PB-234 854/8GA PC$6.00/MF$2.25
Top of Alabama Regional Council of Governments, Huntsville.
TARCOG TEMPORARY EMERGENCY HOUSING STUDY.
Final rept.
Jun 74, 60p ALA-TAC-XX12-1042-01

Descriptors: *Regional planning, *Housing studies, *Alabama, Emergency planning, Sites, Disasters, Project planning.
Identifiers: *DeKalb County(Alabama), *Jackson County(Alabama), *Limestone County(Alabama), *Madison County(Alabama), *Marshall County(Alabama).

The report identifies available housing sites within the TARCOG Region which may be used as a source of temporary housing sites. Sites were prioritized where required and were developed with the assistance of local officials and property owners. In addition to identifying site model, agreements were developed which would allow the temporary use of the site in the times of natural disaster.

PB-234 915/7GA PC$4.00/MF$2.25
Urban Observatory of Metropolitan Nashville-Univ. Centers, Tenn.
AN INVENTORY OF PRIVATE AND PUBLIC TRANSPORTATION SERVICES IN THE SOCIAL-SERVICES SYSTEM OF METROPOLITAN NASHVILLE, TENNESSEE.
Final rept.
Jun 71, 8p UO-LCCM-NASH-71-013
Contract HUD-H-987

Descriptors: *Urban transportation, *Social planning, Social goals, Minorities, Surveys, Questionnaires, Social welfare, Welfare programs, Tennessee.
Identifiers: *Nashville(Tennessee), Social service agencies, *Social services.

The report presents a study of the extent to which local social service agencies provide transportation services for their clientele. The results are shown by types of transportation arrangements in order to show the variety of arrangements and the extent to which each arrangement is preferred over another. The report provides an inventory of the current resources available and is intended to be the first step in establishing a data base from which to make recommendations and projections for a more efficient use of transportation resources.

PB-234 945/4GA PC$9.00/MF$2.25
Applied Management Sciences, Inc., Silver Spring, Md.
MIDDLETOWN'S MUNICIPAL SOLID WASTE MANAGEMENT SYSTEM: A CASE STUDY.
Final rept.
1973, 118p EPA-SW-530-79c
Contract EPA-68-03-0041

Descriptors: *Solid waste disposal, *Urban planning, *Ohio, Earth fills, Demography, Local government, State government, Federal government, Regulations, Regional planning, Refuse, Garbage, Trucks, Labor relations, Cost analysis, Cost estimates, Legislation, Collection.
Identifiers: Sanitary landfills, Middletown(Ohio).

This study examines the solid waste collection and disposal system in Middletown, Ohio. The background of the system, including location, geography, demography climate, form of government, and the solid waste management agencies is described, and the characteristics of the system, including the services, equipment, and finances are discussed.

TT-74-50017 PC$7.50/MF$2.25
National Science Foundation, Washington, D.C.
TRANSACTIONS OF THE VEDENEEV ALL-UNION SCIENTIFIC RESEARCH INSTITUTE OF HYDRAULIC ENGINEERING. VOLUME 95, 1971.
1974, 337p
Trans. of Vsesoyuznyi Nauchno-Issledovatelskii Institut Gidrotekhniki. Izvestiya (USSR) v95 p3-297 1971, by A. Wald. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Concrete dams, *Concrete construction, Loads(Forces), Deformation, Stress strain diagrams, Mathematical models, Soil mechanics, Translations, USSR.
Identifiers: Finite element analysis.

13C. Construction Equipment Materials, and Supplies

PB-234 194/9GA PC$3.75/MF$2.25
Franklin Inst. Research Labs., Philadelphia, Pa.
SYNTHETIC AGGREGATE FROM INCINERATOR RESIDUE BY A CONTINUOUS FUSION PROCESS.
Final rept.,
D. Pindzola, and R. C. Chou. Apr 74, 64p* FIRL-3521 FHWA-RD-74-23
Contract DOT-FH-11-7954

Descriptors: *Solid waste disposal, *Aggregates, *Incinerators, *Residues, *Materials recovery, Utilization, Roads, Flexible pavements, Economic analysis, Cost estimates, Fusion(Melting), Concrete, Operating costs, Capitalized costs, Pilot plants.

A pilot plant demonstration was carried out on a simple and highly inexpensive system for converting municipal incinerator residues into dense road aggregates. Residues were hammermilled, burned-out, rapidly fused in a continuous manner, then cooled anti crushed to produce good quality road aggregate for use in bituminous concrete. Residual aluminum in the crushed aggregate presently would preclude its direct use in Portland cement concrete. Full-scale plant design and cost estimates were prepared. These show that the complete residue fusion system producing 120 tons/day of aggregate in conjunction with a typical 600 ton/day refuse incinerator would cost $300,000. Operating costs for the aggregate plant including capital charges would be $4 to $5 per ton of aggregate.

PB-234 569/2GA PC$7.25/MF$2.25
California State Div. of Highways, Sacramento. Bridge Dept.
FIELD ELECTRICAL MEASUREMENTS FOR BRIDGE DECK MEMBRANE PERMEABILITY AND REINFORCING STEEL CORROSION.
Interim rept. Jun 70-Jan 73,
Robert L. Boulware, and Carl F. Stewart. Jun 73, 81p CA-HY-BD-7120-3-73-5

Descriptors: *Bridge decks, *Corrosion tests, *Reinforcing steel, Electrical resistivity, Electric potential, Waterproof coatings, Membranes, Deicers, Reinforced concrete, Chlorides, Flexible pavements.

The report discusses the problems associated with electrical resistance testing of bridge deck membranes for permeability and electrical potential testing of bridge decks for reinforcing steel corrosion. Obtaining an adequate electrical connection, or ground, to the deck reinforcing was found to be a major problem. Various methods of obtaining a good ground are discussed as well as ways to check the adequacy of a ground connection. Various aspects of the practical use of the electrical potential method as a working tool are discussed. It was found that the limits of undersurface fracturing in a bridge deck cannot be adequately determined by using only the electrical potential method. Also that deck potentials cannot be predicted with a reasonable degree of accuracy from soffit potentials. (Modified author abstract)

PB-234 805/0GA PC$6.25/MF$2.25
Sydney Univ. (Australia). Civil Engineering Labs.
REPORT ON A TEST TO EVALUATE A BRECCIA AS A ROAD BASE COURSE MATERIAL.
Research rept.,
T. Finch. Jul 73, 61p R-221

Descriptors: *Pavement bases, *Road tests, *Breccia, Deformation, Loads(Forces), Moisture, Australia.

This paper describes an experiment with a laboratory test track. A length of road, 16 ft long by 3 ft wide by 6 in deep was subjected to 45,000 passes of a rolling wheel load. The materials tested - stabilized and unstabilized breccia and dolerite - are currently being used as base course materials. The materials behaved satisfactorily when dry, but when tested wet the unstabilized breccia and the dolerite suffered considerable deformations as compared to the deformations of the stabilized breccia. The unstabilized breccia in particular showed typical features of a failed pavement. Horizontal movements equal to vertical movements were recorded. It is suggested that a pavement may experience considerably higher deformations under a single pass of a wheel load than would be expected from the average deformation per load. (Modified author abstract)

SLA-74-159 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.; Sandia Labs., Livermore, Calif.
ENERGY-ABSORBING CHARACTERISTICS OF MATERIALS.
T. K. Hill, and W. W. Joseph. May 74, 18p
Contract AT(29-1)-789

Descriptors: (*Building materials, *Energy absorption), (*Wood, Energy absorption), (*Glass, Energy absorption), (*Aluminium, Energy absorption), Asbestos, Ceramics, Compression, Concretes, Data, Energy transfer, Extensometers, Foams, Geometry, Impact tests, Kinetics, Paper, Solids, Steels, Strains.

For abstract, see NSA 30 04, number 12164.

13D. Containers and Packaging

AD-783 572/1GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
STABILIZATION AND HOLDING OF METALS BY MAGNETIC FIELD,
E. S. Paslavskii. 1 Jul 74, 20p Rept no. FTD-HT-23-1289-74
Edited trans. of Raspredelennoe Upravlenie Protsessami v Sploshnykh Sredakh. Trudy Seminara (USSR) v1 n1 p43-57 1969, by Marilyn Olaechea.

Descriptors: *Containment(General), Magnetic fields, Liquid metals, Suspension devices, Stabilization, Translations, USSR.

Most metals in a molten state have a high degree of chemical activity. The material of the crucible dissolves in the molten metal and contaminates it. Modern technology has often posed the problem of obtaining a metal which is of the same purity after melting as before. This problem becomes particularly acute when superpure and refractory materials are desired. A promising solution to this problem appears to be the use of an 'electromagnetic crucible.' A device is describes in which molten metal is held by the forces of the electromagnetic field and does not have direct contact with any substance.

PATENT-3 726 645 Not available NTIS
Department of the Army Washington D C
INERT PLASTIC FILM FOR SUPPORT AND PACKAGING OF CHEMICAL SPOT TEST SYSTEMS.
Patent,
Thomas D. Kaczmarek. Filed 6 Jul 70, patented 10 Apr 73, 4p Rept nos. PAT-APPL-52 499,

Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Patents, *Packaging, *Chemicals, *Plastic coatings, Chemical analysis, Halogenated hydrocarbons, Films, Containerizing, Containers.
Identifiers: *Spot tests, PAT-CL-23-253-TP.

The invention relates to a new apparatus, material, and method for the packaging and support of chemical spot test systems containing multiple spot tests enclosed in a container which can be carried in a jacket or shirt pocket. It has utility in any chemical system where reaction between the container means and the chemical system must be eliminated.

UCRL-75361 PC$4.25/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
POLYMER-LINED FILAMENT-WOUND PRESSURE VESSELS FOR NITROGEN CONTAINMENT.
M. A. Hamstad, T. T. Chiao, and E. S. Jessop.
1974, 22p CONF-740521-1

Descriptors: (*Nitrogen, *Containers), (*Pressure vessels, *Design), Failures, Fatigue, Filaments, Gases, Losses, Performance testing, Polymers, Rubbers.

For abstract, see NSA 30 04, number 12167.

13E. Couplings, Fittings, Fasteners, and Joints

PATENT-3 731 505 Not available NTIS
Department of the Army Washington D C
ONE-OUT-OF-TWO LOCK SYSTEM.
Patent,
Max Rosenberg, and Andrew J. Marhefka. Filed 16 Dec 71, patented 8 May 73, 5p Rept nos. PAT-APPL-208 773,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Locking fastener devices, *Patents, Security, Structural members, Alignment.
Identifiers: PAT-CL-70-63.

The present invention is the outgrowth of a long existant need for a security container having a high reliability of authorized entry. A new approach toward attaining this end is embodied in the invention. This approach is essentially one of increasing the number of independent lock mechanisms within the security container, thereby building a redundancy or fail-safe factor into the overall system.

13F. Ground Transportation Equipment

AD-783 663/8GA PC$8.75/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
RUNNING GEAR OF CROSS-COUNTRY VEHICLES,
R. G. Armaderov, N. F. Bocharov, and A. V. Filyushkin. 19 Apr 74, 114p Rept no. FSTC-HT-23-1447-73
Trans. of mono. Dvishiteli Transportnykh Sredstv Uysokoi Prokhodimosti, Moscow, 1971 104p.

Descriptors: *Ground vehicles, Offroad traffic, Vehicle chassis components, Translations, USSR.

Various designs of cross-country running gear are discussed. Advantages and disadvantages of tracks, half-tracks, standard-wheeled vehicles, wide-profile wheeled ones, air rollers, and roller tracks are examined and comparison made for operations on soft soils, snow, sand and in some cases on the water. Comparisons are made from viewpoints of relative initial cost, service life, speed and load capacity, with specific pressure on the surface traversed being the primary criterion for cross-country performance.

AD-783 697/6GA PC$11.00/MF$2.25
Army Materiel Command Alexandria Va
ENGINEERING DESIGN HANDBOOK: MILITARY VEHICLE ELECTRICAL SYSTEMS.
14 Jun 74, 593p Rept no. AMCP-706-360

Descriptors: *Electrical equipment, *Military vehicles, *Handbooks, Vehicles, Systems analysis, Human factors engineering, Reliability, Maintainability, Safety, Standardization, Generators, Energy storage, Converters, Electric power, Distribution, Control, Control systems, Electric motors, Ignition systems, Weapon systems, Warning systems, Instrumentation, Electromagnetic compatibility.
Identifiers: Design.

The objectives of the handbook are: (1) to collect diverse sources of information unique to combat and tactical vehicles in order to conserve time, materials, and money in the successful design of new equipment; (2) to provide guidance in capsule form for new personnel, Armed Forces contractors, or experienced design engineers in other fields who require information about vehicle electrical systems; (3) to supply current fundamental information; and (4) to place the reader in a position to use new information generated subsequent to the publication of this handbook. To meet these objectives, the handbook has been written to provide the necessary background regarding electrical equipment and systems so that more complete information and data available in the references can be used.

PATENT-3 731 979 Not available NTIS
Department of the Army Washington D C
BRAKE ANTI-SKID SYSTEM.
Patent,
Joseph J. Mikaila. Filed 19 Mar 71, patented 8 May 73, 9p Rept nos. PAT-APPL-125 985,
Previously filed 3 Nov 69 as PAT-APPL-873 428.
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Disc brakes, *Skidding, *Patents, Detectors, Electromagnetic radiation, Vehicle brakes, Hydraulic equipment.
Identifiers: PAT-CL-303-21-F, Antiskid devices.

The patent relates to an electromagnetic sensing device on the wheels of a vehicle producing a voltage that is used to keep a relay switch in a central power circuit open. Upon loss of this voltage due to stoppage of a wheel during skidding, the power circuit closes a solenoid valve in the hydraulic brake line, preventing the brake fluid pressure from dropping, and thus keeping the brake disc from rotating. Simultaneously, a square wave generator in the power circuit produces a square wave voltage to activate a solenoid coil operating a piston for automatically cycling the pressure in the brake line, maintaining the brake torque at or near the point of critical slip.

PB-234 814/2GA PC$4.75/MF$2.25
TRW Systems, Redondo Beach, Calif.
FINAL DESIGN OF AN AT-GRADE GUIDEWAY FOR THE TRACKED AIR CUSHION RESEARCH VEHICLE.
Final rept. May-Nov 73,
Donald D. Magura, William J. Cichanski, and Stephen G. Meisenholder. Nov 73, 144p 96030-L014-0 FRA-ORD/D-74-50
Contract DOT-TSC-442

Descriptors: *Tracked air cushion vehicles, *Mechanical guides, Design, Foundations, Bearing capacity, Reinforced concrete, Precast concrete, Structural analysis, Magnetic levitation.
Identifiers: TACRV(Tracked Air Cushion Research Vehicles), Tracked air cushion research vehicles, *Guideways.

This report describes the final design for an at-grade guideway for the 300 mph Tracked Air Cushion Research Vehicle (TACRV). Detailed drawings and specifications have been developed for this design so that it can be constructed at the DOT High Speed Ground Test Center which is located near Pueblo, Colorado. Present plans are to extend the presently constructed 3 miles of guideway by use of the TRW/ABAM design for the next construction segment. Reductions in the structural cost of the guidway of 20-30% have been predicted. The guideway described in this report uses a continuously reinforced concrete pavement slab for the horizontal levitation surface and precast concrete panels for the vertical guidance surface. The guidance panels are attached to the slab by steel I-beams. This report summarizes the design features, design constraints, critical loads and cost estimates for this guideway structure. Also described are construction considerations and requirements for the foundation. Theoretical models and results of the static and dynamic analyses are described in appendices.

13G. Hydraulic and Pneumatic Equipment

AD-783 479/9GA PC$3.25/MF$2.25
Harry Diamond Labs Washington D C
FLUERICS 36: LARGE-SCALE MODELING OF LAMINAR FLUERIC DEVICES.
Technical memo.,
Chris E. Spyropoulos. Feb 74, 29p Rept no. HDL-TM-73-28
See also report dated Sep 73, AD-779 516.

Descriptors: *Flueric devices, Scaling factors, Laminar flow, Fluidics, Models, Test facilities.
Identifiers: *Proportional amplifiers.

The purpose of this report is to investigate large-scale modeling of laminar flueric flow phenomena. A test facility using silicone oil as the working fluid and Reynolds number as the modeling parameter was designed, constructed, and instrumented. The test facility described is inexpensive and easy to operate. Models can be readily inserted, tested, and modified for retesting. In order to test the validity of modeling, performance characteristics of a large-scale model and an existing laminar-air proportional amplifier were compared. Agreement between similar performance characteristics was very good, with differences accounted for by experimental error and the existence of small variation in geometric similarity between the model and air device. Results obtained thus verify that the laws of similitude are valid for the conditions specified, and can be readily used. (Author)

AD-783 738/8GA PC$4.25/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
DESIGNING PROCESS PARAMETER TRANSDUCERS USING FLUIDIC ELEMENTS,
G. G. Molchanov, A. P. Popov, and E. K. Shchepin. 1 Apr 74, 22p Rept no. FSTC-HT-23-1642-73
Trans. of unidentified Russian language mono. from International Fluidics Conference (4th) Varna (Bulgaria), 14-18 Oct 72, Paper B-16 14p.

Descriptors: *Transducers, Hydraulic equipment, Fluidics, Control, Processing, Translations, USSR.

Hydraulic transducers measuring certain standard process parameters are discussed, incorporating impact modulators. Schemes of compensation-type transducers are presented; transfer functions are derived; and the results of experimental studies of static and dynamic characteristics are included.

AD-783 819/6GA PC$6.75/MF$2.25
Naval Postgraduate School Monterey Calif
A RATIONAL BASIS FOR CIRCUMFERENTIAL DISTORTION INDEX FORMULATION.
Master's thesis,
Charles Patrick Downs. Jun 74, 71p

Descriptors: *Axial flow compressors, *Axial flow, Flow fields, Flow, Models, Distortion, Pressure, Temperature, Vortices, Theses.

NASA has recently published data on the effects of temperature and pressure distortion on the stability of axial-flow compressors. Theoretical predictions of compressor instability based on vorticity do not explain the observed compressor stability of the NASA tests. Description of distorted flow by vorticity is extended by a simplified model which incorporates vortex sheets and influence coefficients. To determine the upstream influence of the compressor on flow field distortion, a model using parallel compressor theory, experimental data from NASA and a pressure ratio equation derived by Hill and Peterson is formulated. The model correctly predicts compressor blade loading calculated by Carta. This new model accounts for upstream effects of the compressor and shows that the vorticity model by itself is incomplete. Incorporation of the new model into a distortion index based on radial vorticity and total pressure change is proposed and discussed. (Author)

13H. Industrial Processes

AD-783 702/4GA PC$5.00/MF$2.25
Naval Ammunition Depot Crane Ind Weapons Quality Engineering Center
A GRAPHICAL SHORT-CUT TO HYPERGEOMETRIC SAMPLING,
Donald L. Jerger. Jul 74, 39p Rept no. WQEC/TR-17

Descriptors: *Sampling, *Quality control, Defects(Materials), Probability density functions, Computations, Graphics.
Identifiers: Tolerance limits, Hypergeometric probability distribution functions.

Finite population sampling without replacement necessitates the use of the hypergeometric probability distribution. The report presents a graphical approach to the use of the hypergeometric distribution for for LTPD (lot tolerance percent defective) sampling. The graphical solutions cover those more widely used in sample size and confidence limit determinations. (Author)

BDX-613-1079 PC$5.25/MF$2.25
Bendix Corp., Kansas City, Mo.
APPLICATION OF STATISTICAL METHODS TO MANUFACTURING OPERATIONS.
C. Latimer, and J. H. Carder. Mar 74, 38p
Contract AT(29-1)-613

Descriptors: (*Fabrication, Statistics), (*Statistics, *Uses), Industrial plants, Variations.

For abstract, see NSA 30 04, number 12073.

BDX-613-1112 PC$4.50/MF$2.25
Bendix Corp., Kansas City, Mo.
BURR: MANUFACTURING'S PERENNIAL THORN.
L. K. Gillespie. 1974, 27p CONF-740445-2
Contract AT(29-1)-613

Descriptors: (*Metals, *Surface finishing), Machining, Roughness.

For abstract, see NSA 30 04, number 12171.

COO-3158-31 PC$4.00/MF$2.25
Cornell Univ., Ithaca, N.Y. Dept. of Materials Science and Engineering.
COMPUTERIZED CONTROL AND DATA ACQUISITION SYSTEM FOR QUENCHING AND ANNEALING THIN METAL WIRES. REPORT NO. 2183.
H. C. W. Huang, and A. S. Berger. 1973, 17p
Contract AT(11-1)-3158

Descriptors: (*Quenching, *Control systems), (*Annealing, Control systems), (*Wires, Quenching), (*Tungsten, Quenching), Data acquisition systems, Metals, Point defects, Thermal cycling.

For abstract, see NSA 30 05, number 13154.

GEPP-115 PC$4.00/MF$2.25
General Electric Co., St. Petersburg, Fla. Neutron Devices Dept.
EFFECTS OF TOLUENE AND POLYSULFIDE ON SEMIRIGID INSPECTION RESIN.
K. E. Creed. 11p
Contract AT(29-2)-656

Descriptors: (*Resins, *Hardness), (*Sulfides, *Solvent properties), (*Toluene, Solvent properties), Casting, Coatings, Inspection, Materials testing, Neutron sources, Protective coatings, Rubbers, Solids, Stress relaxation, Tensile properties, Zinc.

For abstract, see NSA 30 04, number 10475.

GEPP-123 PC$4.00/MF$2.25
General Electric Co., St. Petersburg, Fla. Neutron Devices Dept.
SOLDER FLUX RESIDUE CLEANING.
K. E. Creed. 18p
Contract AT(29-2)-656

Descriptors: (*Metallurgical flux, Residues), (*Residues, *Removal), (*Resins, *Defects), Breakdown, Casting, Cleaning, Cracks, Enamels, Evaporation, Freons, Heptane, Materials testing, Neutron sources, Propanols, Protective coatings, Soldering, Solenoids, Solubility, Solvents, Transformers, Ultrasonic waves, Voids.

For abstract, see NSA 30 04, number 10476.

KFK-1903 PC$7.25/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Reaktorentwicklung.
SELF-WELDING OF STRUCTURAL MATERIALS IN LIQUID SODIUM.
F. Huber, K. Mattes, and H. Weinhold. Feb 74, 82p
In German. U.S. Sales Only.

Descriptors: (*Stainless steels, *Welding), (*Steels, Welding), Adhesion, Bonding, Self-diffusion, Sodium.

For abstract, see NSA 30 05, number 13137.

NASA-SP-5922(2) PC$1.00/MF$2.25
National Aeronautics and Space Administration, Washington, D.C.
MATERIAL CUTTING, SHAPING, AND FORMING. A COMPILATION.
29p

Descriptors: (*Beryllium, *Fabrication), (*Beryllium oxides, *Ceramics), Cutting.

For abstract, see NSA 30 05, number 13070.

SC-DR-710016 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
APPROACH TO METALLIZE-BRAZE RESEARCH AND PROCESS DEVELOPMENT.
E. J. Nowak. Jan 71, 11p

Descriptors: (*Aluminium oxides, *Brazing), (*Molybdenum, Brazing), (*Manganese, Brazing), Ceramics, Chemical properties, Composite materials, Joints, Layers, Metals, Sealed sources, Sealing materials, Seals, Stresses.

For abstract, see NSA 30 04, number 12162.

Y-DA-5792 PC$4.00/MF$2.25
Oak Ridge Y-12 Plant, Tenn.
MEASUREMENT OF SURFACE FIGURE AND SURFACE FINISH AT THE Y-12 PLANT.
R. E. Sladky. 11p CONF-740524-1
Contract W-7405-eng-26

Descriptors: (*Metals, *Surface finishing), (*Lenses, Surface finishing), Configuration, Crystal structure, Electron microscopes, Inspection, Interferometers, Machining, Magnesium, Optical properties, Shape, Thickness.

For abstract, see NSA 30 04, number 12201.

13I. Machinery and Tools

AD-783 486/4GA PC$3.25/MF$2.25
Watervliet Arsenal N Y
FINITE ELEMENT ANALYSIS OF SEVERAL SWAGE MANDREL DESIGNS.
Technical rept.,
H. Goodheim, and G. P. O'Hara. Jun 74, 50p Rept no. WVT-TR-74011

Descriptors: *Mandrels, Swaging, Numerical analysis, Autofrettage, Stresses, Stress concentration, Plastic deformation, Computer programs.
Identifiers: Design, Finite element analysis, NASTRAN computer program.

Any approach to the design of Swage Mandrels has been difficult for three reasons. First, the analysis of short cylinders is difficult. Second, it is nearly impossible to obtain accurate experimental results on mandrels. Third, the sintered tungsten carbide material is unreliable. The NASTRAN finite element program has made possible accurate analysis of the problem. Twelve different designs have been analyzed. These show how different geometries affect the stress distribution. They also show that a steel ball may be an inexpensive reliable swage mandrel. (Author)

AD-783 521/8GA PC$4.00/MF$2.25
Navships Industrial Support Office San Francisco Calif
TEST REPORT OF UNDERWAY REPLENISHMENT AIRCRAFT CARRIER (CVA) TENSION BURTON/SPANWIRE WINCH.
Technical rept.,
R. H. Dickson, and M. Stewart. May 74, 90p Rept no. TR-8-74

Descriptors: *Aircraft carriers, *Replenishment, *Winches, *Cables, Reliability, Tension, Oscillation, Performance(Engineering), Test Methods.
Identifiers: *Burton tests, *Spanwire winches, *Replenishment at sea.

The CVA Burton/Spanwire Winch Test isolated specific problems with the prototype winch that will require corrective action. The test program subjected the winch to a series of performance tests, fifty hours of burton operations and 400 hours of tension spanwire tests. These tests were conducted to evaluate the winch in simulated at-sea conditions. The performance and burton tests were successfully completed with only minor problems. However, the tension spanwire test was plagued throughout by excessive tension oscillations. This problem was never completely resolved, even though the test was stopped two times for replacement of defective parts, modification of the servo hydraulic system and numerous electronic adjustments. (Modified author abstract)

AD-783 569/7GA PC$4.75/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
TUBULAR EXTRUSION PRESSES,
B. S. Somov. 25 Jun 74, 149p Rept no. FTD-MT-24-495-74

Edited machine trans. of mono. Truboprofilnye Pressy, n.p., 1972 p3-21, 26-31, 40-45, 62-87, 89-90, 101-103, 105-106, 108, 199-230, by Robert Allen Potts.

Descriptors: *Forge presses, Extrusion, Pipes, Tubes, Pressure, Press forging, Translations, USSR.

Contents: General information about presses; Construction of units and parts of presses; Calculation of impact pressures.

AD-783 578/8GA PC$5.75/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
HARMONIC GEAR DRIVES,
E. G. /Ginsburg
28 Jun 74, 214p Rept no. FTD-MT-24-690-74
Edited machine trans. of mono. Volnovye Zubchatye Peredachi, n.p., 1969 p1-159, by Bernard L. Tauber.

Descriptors: *Transmission gears, *Reduction gears, Variable speed drives, Transmissions(Mechanics), Kinematics, Gear teeth, Translations, USSR.
Identifiers: *Harmonic drives.

The purpose of this book is to acquaint the readers with the operating principle and examples of the rational use of harmonic drives, and also to present one of the first methods for their geometric and strength calculation. The book also examines questions of the study of kinematics and the efficiency of harmonic drives and recommendations are given regarding the design and technology of the manufacture of the basic parts and units.

AD-783 674/5GA PC$3.00/MF$2.25
Navy Experimental Diving Unit Washington D C
TEST OF RAMSET POWER TOOL CARTRIDGES AFTER IMMERSION.
Final rept.,
K. Ploof. 23 Sep 55, 6p Rept no. NEDU-2-56

Descriptors: *Diver equipment, *Underwater tools, Seals, Power tools, Cartridges.

A cursory underwater evaluation was performed on a certain stud gun. Nine of the ten cartridges fired underwater at a depth of 150 feet (45.7M) were judged to have had adequate penetration into a three-eight inch mild stell plate. (Author)

AD-783 758/6GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
CLASSIFICATION OF DEVICES UTILIZING THE PRINCIPLE OF MAGNETIC SUSPENSION WITH PERMANENT MAGNETS AND DIRECT-CURRENT ELECTROMAGNETS,
B. K. Bul, and G. G. Gavrilov. 9 Aug 73, 12p Rept no. FSTC-HT-23-2458-72
Trans. of Izvestiya Vysshikh Uchebnykh Zavedenii. Elektromekhanika (USSR) n7 p744-751 1970, by Albert L. Peabody.

Descriptors: *Suspension devices, Permanent magnets, Magnetic devices, Magnetic fields, Bearings, Translations, USSR.

The article attempts to make a more detailed classification of magnetic suspension systems using permanent magnets than that already existing, describes varieties of devices available, and notes their characteristics.

AD-783 759/4GA PC$4.00.1.45
Army Foreign Science and Technology Center Charlottesville Va
EXPERIMENTAL INVESTIGATION OF THE COEFFICIENT OF SLIDING FRICTION DURING ROTATION OF A STEEL SHAFT IN A POLYMER BEARING,
M. I. Voronin, P. A. Petrukhin, and B. M. Morosov. 25 Apr 74, 10p Rept no. FSTC-HT-23-2202-72
Trans. of Sbordnik Trudov, n8, Moscow, 1968. p15-21 (sic).

Descriptors: *Journal bearings, Polymers, Friction, Sliding, Shafts(Machine elements), Steel, Polyamide plastics, Nylon, Additives, Translations, USSR.
Identifiers: *Sliding friction.

Results of comparative tests on the friction of bearings made of several polymer compositions are described. The level of energy losses on the friction of steel shaft in a bearing was selected as the evaluation criterion. The effect of operating conditions on the change of the magnitude of losses is discussed.

PAT-APPL-444 457 PC$4.00/MF$2.25
Atomic Energy Commission, Washington, D.C. Assistant General Counsel for Patents.
SWITCH ACTUATOR.
Patent Application,
Steven L. Halverson, Peeter Elias, Victor Hutter, and Charles J. Davis. Filed 21 Feb 74, 12p
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Actuators, *Patent applications, Switches, Activation, Alignment, Detectors, Liquid metal cooled reactors.
Identifiers: PAT-CL-200-52.

The patent application relates to a contact type detector device which includes a sensor element responsive to the force developed by contacting an object at any of a multitude of angles to develop an output signal thereupon. The sensing element includes a switch, activated by force applied to an actuation member in a particular direction along a first axis, upon which is mounted a housing.

PATENT-3 730 502 Not available NTIS
Department of the Army Washington D C
APPARATUS FOR VACUUM BRAZING-GAS QUENCHING NON-FERROUS AND FERROUS ALLOYS.
Patent,
Paul K. Shutt, Jr., Francis B. Gurtner, and Frank T. Kirk. Filed 21 May 71, patented 1 May 73, 9p
Rept nos. PAT-APPL-145 661,
Previously filed 16 Apr 69 as PAT-APPL-816 697, PATENT-3 608 187.
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Brazing, *Patents, Vacuum apparatus, Quenching.
Identifiers: PAT-CL-266-5-R.

The patent relates to an apparatus for joining metal parts together through the use of a vacuum brazing-gas quenching technique.

13J. Marine Engineering

AD-783 536/6GA PC$3.25/MF$2.25
Woods Hole Oceanographic Institution Mass
AMF ACOUSTIC RELEASE OPERATION AND MAINTENANCE: SUPPLEMENT BY THE WOODS HOLE OCEANOGRAPHIC INSTITUTION'S BUOY PROJECT.
Technical rept.,
Roderigue A. LaRochelle. Jul 74, 46p Rept no. WHOI-74-45
Contract N00014-66-C-0241

Descriptors: *Anchors(Marine), *Release mechanisms, Acoustics, Operation, Mooring, Manuals, Maintenance.
Identifiers: Acoustic anchors, Release systems.

A considerable body of experience has been accumulated by the Woods Hole Oceanographic Institution's Buoy Project in the successful use of American Machine and Foundry's acoustic anchor-release systems. This publication is a manual of maintenance and operation procedures developed here and in conjunction with AMF personnel and their publications, and is intended to supplement rather than to replace AMF's manuals.

AD-783 589/5GA PC$3.75/MF$2.25
Coast Guard Research and Development Center Groton Conn
INFLATABLE BOAT STANDARD DEVELOPMENT.
Final rept.,
Kenneth Rusinek. Dec 73, 53p* Rept no. CGR/DC-4/73 USCG-D-71-74

Descriptors: *Boats, *Inflatable structures, Safety, Standards, Rubber boats, Vinyl plastics, Fabrics, Coatings.

The Federal Boat Safety Act of 1971 establishes boating standards for most monohull boats under 20' in length. The safety standards specifically exclude sailboats, canoes, kayaks and inflatable boats. Commandant (G-DST-2) ltr 735200 Ser 0061 of 12 Dec 72 authorized the Coast Guard Research and Development Center, Groton, Connecticut, to conduct an evaluation of inflatable boats in support of the development of a safety standard. This report contains the data collected and procedures developed in the areas of construction, safe loading, powering and underway stability, and human factors. Recommended standards concepts are proposed. (Author)

AD-783 641/4GA PC$3.00/MF$2.25
Coast Guard Research and Development Center Groton Conn
TESTS OF OUTBOARD MOTORS STARTING IN GEAR.
Final rept.
Sep 73, 19p Rept no. CGR/DC-2/73 USCG-D-62-74

Descriptors: *Boats, *Marine surface propulsion, Outboard, Acceleration, Throttling, Surges, Balance, Coast Guard research.
Identifiers: *Outboard motors.

Tests were conducted to determine what level of acceleration caused loss of balance for a standing person in order to consider whether outboard motors should be fitted with thrust-limiting features. Initial tests were conducted with test subjects standing in a truck. In the most stable position, on centerline facing to the side, 52% of the subjects lost their balance at 0.3 G's or less. In the least stable position, facing aft, 87% lost balance at 0.27 G's or less. In boat tests wherein a single passenger stood in various boats equipped with motors ranging from 6 to 40 HP, the smallest motor (6 HP) did not produce significant unbalancing acceleration with the lightest boats, whereas the next size (9-1/2 HP) motor did. (Author)

AD-783 848/5GA Not available NTIS
British Ship Research Association Wallsend (England) Wallsend Research Station
JOURNAL OF ABSTRACTS OF THE BRITISH SHIP RESEARCH ASSOCIATION. VOLUME 29, NUMBER 6, ABSTRACTS 37,072-37,280,
R. C. Kahler. Jun 74, 79p
See also Volume 29, no. 5, AD-781 698.
Availability: Pub. in Jnl. of Abstracts, v29 n6 p378-455 Jun 74.

Descriptors: *Marine engineering, *Abstracts, Ship structural components, Hydrodynamics, Shipyards, Construction, Production, Marine surface propulsion, Maintenance, Corrosion, Fouling, Underwater vehicles, Offshore, Great Britain.

Contents:
Ship design;
Ship construction;

Ship machinery and systems;
Ship operation;
Ocean engineering.

AD-783 861/8GA PC$7.00/MF$2.25
Naval Postgraduate School Monterey Calif
FINITE ELEMENT SOLUTION OF THE INTERACTION OF A PLANE ACOUSTIC BLAST WAVE AND A CYLINDRIC STRUCTURE.
Master's thesis,
Donald Lee Atchison. Jun 74, 80p

Descriptors: *Underwater explosions, *Submarines, *Structural response, Mechanical waves, Blast, Wave propagation, Three dimensional, Mathematical models, Numerical analysis, Theses.
Identifiers: Finite element analysis.

The finite element method is used to study the structural response of a submarine to an acoustic blast wave. Encounter geometry is restricted to the case of a plane wave front parallel to the axis of a right-circular cylindric structure. It is shown that the blast wave propagation may be studied separately from the structural response. For the case considered this separation allows a two-dimensional formulation of the propagation problem while retaining a three-dimensional structural model. Propagation results are found to agree well with analytic results obtained by others. (Modified author abstract)

AD-783 951/7GA PC$5.00/MF$2.25
Naval Underwater Systems Center New London Conn New London Lab
DYNAMICS OF A CABLE-TOWED-BODY SYSTEM.
Technical rept.,
Gary T. Griffin. 10 Jul 74, 157p Rept no. NUSC-TR-4709

Descriptors: *Towed bodies, *Ocean waves, Cables, Dynamics, Loads(Forces), Equations of motion, Hydrodynamics, Numerical integration, Computer programs, Digital simulation, Theses.

The study investigates the forces acting upon a cable-towed-body system and develops a digital computer simulation of its dynamics in a plane. The towed system that is discussed was excited by ship motions caused by deep-ocean waves. Equations of motion for the towed body are written and reduced to a set of ordinary differential equations having nonconstant coefficients. In order to effect solutions using numerical integration techniques, a method is developed that reduces the equations of motion so that cross-coupled hydrodynamic inertia terms can be included in a Runge-Kutta numerical integration scheme. (Modified author abstract)

PATENT-3 731 646 Not available NTIS
Department of the Army Washington D C
EXPLOSIVE EMBEDMENT ANCHOR PROJECTILE.
Patent,
Henry C. Mayo. Filed 6 Aug 70, patented 8 May 73, 5p Rept nos. PAT-APPL-61 567,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Anchors(Marine), *Embedding, *Patents, Explosive charges, Ocean bottom, Probes, Structural members.
Identifiers: PAT-CL-114-206-A.

The patent relates to an explosive embedment anchor for use in all types of ocean bottom sediments except consolidated rock. The anchor forms the projectile which is fitted to the gun barrel. The assembly is lowered to the ocean floor and a charge in the gun is detonated by contact therewith to drive the anchor into the sediment. The anchor is provided with a pair of hinged flukes having keying flaps on their upper edges and riser cables. Holding power is achieved by an upward pull on the riser cables causing the keying flaps to wedge against the wall of the crater formed by the anchor's entry and the flukes open to provide maximum pullout resistance.

PATENT-3 732 841 Not available NTIS
Department of the Army Washington D C
EXPLOSIVELY EMBEDDED ANCHOR.
Patent,
Henry C. Mayo. Filed 26 Mar 71, patented 15 May 73, 6p Rept nos. PAT-APPL-128 299,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Anchors(Marine), *Embedding, *Patents, Shaped charges, Ocean bottom, Guns, Recovery.
Identifiers: PAT-CL-114-206-A.

The disclosed invention is an explosively embedded anchor assembly for use in all types of ocean bottom and in all water depths. The anchor assembly has a shaped charge explosive for producing a hole in a rock ocean floor, a projectile anchor for embedding in all ocean floors, and a projectile gun for explosively embedding the anchor. The assembly is provided with bottom-contact detonating means which permits automatic firing of the shaped charge and the anchor, and with a buoyant reaction vessel affixed to the projectile gun to permit automatic recovery of the gun.

13K. Pumps, Filters, Pipes, Fittings, Tubing and Valves

COM-74-11387/9GA PC$4.75/MF$2.25
Texas A and M Univ., College Station. Dept. of Civil Engineering.
A BIBLIOGRAPHY OF OFFSHORE PIPELINE LITERATURE,
N. W. Lai, S. J. Campbell, R. F. Dominguez, and W. A. Dunlap. Jun 73, 133p* TAMU-SG-74-206 NOAA-74070306
Grant NOAA-04-3-158-18
Report on Sea Grant Program.

Descriptors: *Offshore structures, *Pipelines, *Bibliographies, Design, Construction, Fluid mechanics, Structural analysis, Ocean bottom.
Identifiers: Sea Grant program.

A collection of 464 references to literature pertaining to offshore pipelines is presented in three sections. The first section consists of a key-word index with article titles and code number listed under each key-word. The second section consists of an author index arranged in alphabetical sequence. Under each author's name, article titles, and code numbers are included. The third section is a general listing index. Code numbers are listed in numerical order in this section. Under each number is listed the title of the article, the author and source (publication or document).

13L. Safety Engineering

CONF-740519-1 PC$4.00/MF$2.25
Oak Ridge National Lab., Tenn.
SYSTEM FOR LABELING AND CONTROL OF TOXIC MATERIALS IN A LARGE RESEARCH FACILITY.
W. E. Porter, C. L. Jr. Hunt, and N. E. Bolton. Apr 74, 18p
Contract W-7405-eng-26

Descriptors: (*Industrial plants, *Safety), Additives, Indicators, Reagents, Solvents, Storage, Surfactants, Toxicity.

For abstract, see NSA 30 04, number 12113.

K-GD-1009 PC$4.00/MF$2.25
Oak Ridge Gaseous Diffusion Plant, Tenn.
OPEN INTERLOCK DETECTOR.
G. B. Seaborn. May 74, 7p
Contract W-7405-eng-26

Descriptors: Equipment protection devices, Safety, Safety engineering, Switches.

For abstract, see NSA 30 04, number 09475.

PB-234 706/0GA PC$6.00/MF$2.25
Michigan Univ., Ann Arbor. Highway Safety Research Inst.
STATISTICAL INFERENCE FROM MULTIDISCIPLINARY ACCIDENT INVESTIGATION.
Final rept. May 72-Jun 73,
James O'Day, William L. Carlson, Richard Douglass, and Richard J. Kaplan. Aug 74, 238p
UM-HSRI-SA-73-4 DOT-HS-801 111
Contract DOT-HS-031-2-350

Descriptors: *Motor vehicle accidents, *Accident investigations, Collision research, Injuries, Reggression analysis, Data processing, Statistical inference.

Multi-disciplinary accident investigation (MDAI) reports generated by more than twenty contractors have been compiled in digital form for analysis. Methods for drawing inferences regarding the relationship between crash severity and injury severity in the face of poorly defined samples are presented. The problems of determining accident and injury causation factors are discussed. Certain sub-sets of the MDAI data, particularly when considered with police-reported accident information from the same jurisidctions, can be used to estimate the frequency of occurrence of some phenomena of interest. Finally a plan is presented for a modification of the present MDAI program which should achieve both a statistically representative sample of accidents for a large portion of the United States and a capability to conduct special short term studies to answer specific questions.

PB-234 707/8GA PC$6.75/MF$2.25
Calspan Corp., Buffalo, N.Y.
MATHEMATICAL RECONSTRUCTION OF ACCIDENTS-ANALYTICAL AND PHYSICAL RECONSTRUCTION OF TEN SELECTED HIGHWAY ACCIDENTS.
Interim rept. Jun 73-Mar 74,
John A. Bartz, Raymond R. McHenry, and David J. Segal. Mar 74, 283p CALSPAN-ZQ-5341-V-1
DOT-HS-801 150
Contract DOT-HS-053-3-658
See also PB-220 150.

Descriptors: *Motor vehicle accidents, *Accident investigations, Collision research, Mathematical models, Computerized simulation, Impact, Injuries, Predictions, Rocket propelled sleds, Crash tests, Statistical analysis, Correlation techniques.

Ten actual highway accidents have been mathematically reconstructed in a process comprised of two parts. First, trajectories of the vehicles were reconstructed from physical evidence observed at the scene, using a computer simulation of a two-vehicle, planar collision. Next, the responses of the right front occupant of the subject vehicle were reconstructed from observed internal vehicle damage and passenger injuries, using the predicted vehicle crash history and a nonplanar mathematical model of the crash victim. Following this analytical effort, the ten accident cases were physically reconstructed on an impact sled, using a sled pulse corresponding to the predicted vehicle deceleration history and an anthropometric crash test dummy to represent the accident victim. The results of most of the sled tests agree generally with observations from the actual crash and the results from the analytical reconstructions of crash victim responses. A correlation is shown to exist between observed injury and predicted vehicle speed change. (Modified author abstract)

13M. Structural Engineering

AD-783 483/1GA PC$3.00/MF$2.25
Watervliet Arsenal N Y
A UNIFIED FINITE ELEMENT APPROACH TO COLUMNS SUBJECTED TO NONCONSERVATIVE LOADS, WITH DAMPING EFFECTS AND VARIOUS END CONDITIONS.
Technical rept.,
Julian J. Wu. Jul 74, 20p Rept no. WVT-TR-74020

Descriptors: *Columns(Supports), Loads(Forces), Boundary value problems, Stability, Stress strain relations, Damping.
Identifiers: Finite element analysis.

Using the concept of unconstrained field variables, a general adjoint variational principle is formulated for columns subject to nonconservative loads and with various end conditions. External damping as well as material damping are also included in the same formulations. Emanating from this variational principle, finite element techniques have been developed to include problems with a wide variety of end conditions of the column by simply varying the values of several parameters. These end parameters represent the degrees of flexibility, of damping, and the amount of tip mass, etc. Thus the critical loads of stability of the column structure can be determined for any of the load-end condition combinations using the same formulations and hence the same computer programs. Numerical results are presented here for several combinations of parameters. (Author)

AD-783 737/0GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
DESIGN OF PLATES RECTANGULAR IN PLAN AND CYLINDRICAL SHELLS USING ROD SYSTEMS BY SEPARATION OF EQUATIONS (RASCHET PRYAMOUGOLNYKH V PLANE PLIT I TSILINDRICHESKIKH OBOLOCHEK PO STERZHNEVYM SKHEMAM PUTEM RAZDELENIYA URAVNENII),
N. A. Vulfovich, and V. G. Korneev. 3 Nov 72, 17p Rept no. FSTC-HT-23-2596-72
Trans. of Vsesoyuznyi Nauchno-Issledovatelskii Institut Gidrotekhniki. Izvestiya (USSR) v90 p89-101 1969.

Descriptors: *Plates, *Shells(Structural forms), Cylindrical bodies, Rectangular bodies, Computations, Bending, Bending moments, Differential equations, Translations, USSR.
Identifiers: *Cylindrical shells, Design.

PB-234 016/4GA PC$4.00/MF$2.25
Virginia Polytechnic Inst. and State Univ., Blacksburg. Dept. of Engineering Science and Mechanics.
A FINITE DEFORMATION ANALYSIS OF THE NEAR FIELD SURROUNDING THE TIP OF CRACK-LIKE ELLIPSES.
Rept. for 1973-1974,
J. J. McGowan, and C. W. Smith. May 74, 89p
VPI-E-74-10
Grant NSF-GK-39922

Descriptors: *Plates(Structural members), Cracks, Deformation, Biaxial stresses, Finite difference theory, Ellipses, Stress strain diagrams.

A finite deformation analysis of the region surrounding the tip of small crack-like ellipses in an infinite plate under all around tension is presented. The study is carried out in the deformed geometry and includes the effects of finite strains and rotations. A stress function is first introduced to the complete compatibility equations through linear constitutive relations; the resulting governing equation is solved through finite differences. The range of root radii investigated varies from one to nine times that of a deformed crack. Normal stresses and strains, maximum in-plane shear stress, displacements and stress intensity factors are presented. The results of the analysis are compared to the linear analysis of Inglis. The effects of finite strains and rotations are shown to be large but are concentrated within a few root radii of the tip. It has been found that two types of behavior exist at the tip of notches, depending on the size of the root radius: small root radii produce maximum stresses away from the tip, whereas larger root radii produce maximum stresses at the tip itself.

14. METHODS AND EQUIPMENT

14B. Laboratories, Test Facilities, and Test Equipment

AD-783 561/4GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
DETERMINATION OF THE ENERGY OF PULSE CURRENT BY A THERMO-ELECTRIC CONVERTER,
B. P. Kozyrev, and T. Yu. Sheveleva. 24 Jun 74, 11p Rept no. FTD-HT-23-1529-74
Edited trans. of Elektrotekhnicheskii Institut, Leningrad. Izvestiya (USSR) v71 n99 p34-37 1972, by Robert D. Hill.

Descriptors: *Pulse integrators, *Measuring instruments, Converters, Thermocouples, Integrators, Energy, Electric charge, Translations, USSR.
Identifiers: Thermoelectric generators.

A description is given of two designs of thermal converters for the integration of currents of more than 10 microamps in low-resistance circuits. The frequency range of the instruments is 0-25 mHz, and the time constant is within 5-10 minutes.

AD-783 575/4GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
METHODS OF MEASURING VELOCITY AND PHOTOGRAPHING MODELS IN BALLISTICS TESTS,
A. N. Berezkin, V. N. Bykov, A. G. Gordeev, V. G. Maslennikov, and A. M. Smudenkov. 28 Jun 74, 16p Rept no. FTD-HT-23-1358-74
Edited trans. of mono. from Aerofizicheskie Issledovaniya Sverkhzvukovykh Techenii, n.p., 1967 p218-267, by Marilyn Olaechea.

Descriptors: *Ballistic testing, Photomultiplier tubes, Photocathodes, Electromagnetic pulses, Velocity, USSR, Translations.

AD-783 617/4GA PC$3.25/MF$2.25
Air Force Materials Lab Wright-Patterson AFB Ohio
CALIBRATION AND MODIFICATIONS OF THE MAGNETIC FLOAT PYCNOMETER.
Final rept. Nov 71-Jul 72,
Donald R. Wiff, and Matatiahu T. Gehatia. Apr 74, 37p Rept no. AFML-TR-74-16

Descriptors: *Density, Measuring instruments, Calibration, Measurement, Polystyrene, Solutions(Mixtures).
Identifiers: *Pycnometers, Magnetic float pycnometers, Magnetic suspension, Design.

An automatic 'hands-off' magnetic float pycnometer developed in this laboratory was applied in preliminary research to determine the partial specific volume of polymer in solution. During this phase of the research it became obvious that the original calibration was not adequate. To improve this technique a few modifications have been made, by adding a new digital ammeter and by replacing part of the homemade electronics with a commercial phase lock-in amplifier. Then a new comprehensive calibration was performed and all parameters required to characterize the apparatus and the float were determined. Finally, partial specific volume of the polymer polystyrene in cyclohexane was investigated by applying the new magnetic float pycnometry and also by using the conventional technique. (Modified author abstract)

AD-783 659/6GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
THE N2, A NEW LEVEL,
V. P. Koltsov, and V. D. Ardasenov. 22 Apr 74, 10p Rept no. FSTC-HT-23-175-74
Trans. of Geodeziya i Kartografiya (USSR) n10 p10-14 1972.

Descriptors: *Levels(Instruments), Surveying(Geographic), Translations, USSR.

The new N2 level is intended for second-order geometrical leveling with a mean-square error of no more than one mm per km of double run. The construction of the level, as well as the results of laboratory and field tests performed in 1969, are summarized. The mean-square accidental error per km of the course of second-order leveling amounted to 0.8 mm, and no defects at all were noted when the instrument was inspected and put into operation. The new level completely satisfies the technical requirements of All-Union (GOST) Standard 10528-69 and may be used for second-order leveling.

AD-783 755/2GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
HEAT RELAY SENSOR,
E. B. Kheifits. 5 Nov 73, 4p Rept no. FSTC-HT-23-1425-72
Trans. of Patent (USSR) 281 611.

Descriptors: *Detectors, Heat, Relays, Patents, Translations, USSR.

The patent describes a heat relay sensor with indirect heating, primarily at high currents, and whose heater has been made mobile is distinguished by the fact that it is equipped with a housing that is hinged by a joint with a bimetallic plate on which the heater is set, the purpose being to increase sensitivity.

AD-783 760/2GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
MECHANICAL OSCILLATOR IN A LUMINOUS FLUX,
V. B. Braginskii, V. A. Kuznetsov, and V. N. Rudenko. 26 Apr 74, 9p Rept no. FSTC-HT-23-2288-72
Trans. of Moscow Univ. Vestnik (USSR) n2 p192-197 1971.

Descriptors: *Oscillators, Luminosity, Relaxation time, Instability, Oscillation, Optical equipment, Translations, USSR.

An experimental study was made of the effects of luminous rigidity and radiometric oscillatory instability. High sensitivity when measuring small forces (or moments of forces) in macroscopic experiments can be attained if the dissipative coupling between the probe body and the laboratory is appreciably reduced. When high-Q mechanical oscillators are built and placed in a vacuum, effects are induced that strongly affect the dynamic characteristics of these oscillators. The present report deals with two of these effects.

AD-783 840/2GA PC$5.75/MF$2.25
Dayton Univ Ohio Research Inst
A HYSTERESIGRAPH FOR PLOTTING MAGNETIZATION CURVES.
Technical rept. 1 Jul-31 Dec 66,
Reinhold W. Kubach. 31 Dec 66, 51p AFML-TR-67-216
Contract AF 33(615)-3793

Descriptors: *Plotters, Magnets, Magnetization, Hysteresis, Measurement, Permanent magnets, Cobalt, Rare earth compounds, Measuring instruments, Ferromagnetic materials.
Identifiers: *Hysteresigraphs, *Hysteresis loops.

The objective of this study is to design, build, and calibrate a hysteresigraph for plotting magnetization curves of small cylindrical rod samples of dilute fine particle magnets. The magnetization of the sample and the field near its surface are measured with a set of balanced sensing coils. The voltages induced in these coils when the magnetic field is slowly changed are amplified and integrated electronically by means of two operational amplifiers (Miller integration), whose outputs drive an X-Y recorder. The instrument must record hysteresis loops at peak field strengths up to 20,000 Oe with the expected values of coercive forces ranging from 100 to 10,000 Oe. The peak induction values may be expected to be in the range from 300 to 22,000 Gauss. The instrument has been used to measure hysteresis loops of various permanent magnets, and coercive forces of powdered rare earth-cobalt alloys which are under development as new magnetic materials. (Author)

AREAEE-190 PC$4.25/MF$2.25
Atomic Energy Establishment, Cairo (Egypt).
ANALYSIS OF THE EFFECTS OF ENVIRONMENTAL CHANGES ON RADIOISOTOPIC THICKNESS MEASUREMENTS.
F. M. Abdel Rahman, A. F. El-Saiedi, S. M. Bedair, and M. F. El-Fouly. 1973, 22p
U.S. Sales Only.

Descriptors: (*Paper, *Thickness), (*Thickness gages, *Sensitivity), Humidity, Radiometric gages, Temperature dependence.

For abstract, see NSA 30 05, number 12801.

CEA-R-4511 PC$8.25/MF$2.25
CEA Centre d'Etudes de Bruyeres-le-Chatel, 92 - Montrouge (France).
APPLICATION OF THE LEAST SQUARE METHOD TO MAGNETIC RESONANCE TECHNIQUES.
E. Anger. Apr 74, 103p
In French. U.S. Sales Only.

Descriptors: (*Electron spin resonance, *Spectra), (*Magnetic resonance, *Numerical solution), Least square fit, Mathematical models, Programming, Signals.

For abstract, see NSA 30 04, number 12173.

COM-74-50691/6GA Not available NTIS
National Bureau of Standards, Washington, D.C.
LOW-FREQUENCY ELECTRICAL SIGNAL MEASUREMENT BY ELECTROOPTICAL METHODS.
Journal article 1971-72,
Avner Erez. Jul 74, 3p
Pub. in IEEE Transactions on Instrumentation and Measurement, vIM21 n4 p358-360 Nov 72.

Descriptors: *Electrical measurement, Electrooptics, Feedback amplifiers, Semiconductor diodes, Photodetectors, Signals.
Identifiers: Light emitting diodes.

An analog measuring system consisting of a voltage to light converter and a light detector is used to achieve nearly perfect electrical isolation between the main electrical circuit and the measuring instruments. Linear response of the converter is obtained by electro-optical feedback which controls the energy radiated by a light emitting diode. The light signal is superimposed on a fixed intensity beam, proportional to a zener diode reference voltage. The detector element is a photomultiplier whose sensitivity is controlled by feedback to its power supply, to produce a constant average anode current. The whole system is adjusted to perform as a unity gain amplifier, so that the measurement error can be easily detected and analyzed. The measured accuracy of a laboratory model was approximately 0.1%.

COO-3158-18 PC$4.25/MF$2.25
Cornell Univ., Ithaca, N.Y.
NEON GAS IMAGING OF GOLD IN THE FIELD ION MICROSCOPE. REPORT NO. 1973.
R. S. Averback, and D. N. Seidman. 15 Mar 73, 22p
Contract AT(11-1)-3158

Descriptors: (*Gold, *Ion microscopy), Images, Irradiation, Neon, Quenching, Stability, Temperature dependence, Uhv systems.

For abstract, see NSA 30 04, number 12154.

GEPP-129 PC$4.00/MF$2.25
General Electric Co., St. Petersburg, Fla. Neutron Devices Dept.
ULTRASONIC TEST EQUIPMENT ALIGNMENT.
R. W. Andrews. 11 Jun 74, 9p
Contract AT(29-2)-656

Descriptors: (*Ultrasonic testing, Transducers), (*Transducers, *Alignment), (*Welded joints, Ultrasonic testing), Accuracy, Performance, Reliability.

For abstract, see NSA 30 04, number 09442.

INPT-33 PC$4.00/MF$2.25
Institute of Nuclear Physics and Techniques, Krakow (Poland).
QUESTION OF THE FAST NEUTRON ABSORPTION IN MOISTURE MEASUREMENTS BY THE NEUTRON METHOD.
A. Kreft. Jun 73, 20p
U.S. Sales Only.

Descriptors: (*Moisture gages, *Calibration), (*Soils, *Moisture), Absorption, Dolomite, Fast neutrons, Limestone, Neutron transport, Radiometric gages, Sandstones, Slowing-down.

For abstract, see NSA 30 04, number 09643.

LBL-2585 PC$4.00/MF$2.25
California Univ., Berkeley Lawrence Berkeley Lab.
NON-CONVENTIONAL ELECTRON MICROSCOPY IN SMALL DEFECT CHARACTERIZATION.
K. Seshan. Feb 74, 2p CONF-740803-2
Contract W-7405-eng-48

Descriptors: (*Electron microscopy, *Crystal defects), Images, Measuring methods.

For abstract, see NSA 30 05, number 13068.

LBL-2712 PC$4.00/MF$2.25
California Univ., Berkeley Lawrence Berkeley Lab.
HIGH RESOLUTION IMAGING IN BRIGHT AND DARK FIELD AT HIGH VOLTAGES.
L. J. Chen, and K. Seshan. Mar 74, 3p CONF-740803-3
Contract W-7405-eng-48

Descriptors: (*Images, *Resolution), Beam luminosity, Bragg reflection, Defects, Diffraction, Electric charges, Electric dipoles, Electric potential, Electron microscopy, Interactions, Visible radiation.

For abstract, see NSA 30 05, number 14739.

NASA-SP-5957(1) PC$1.00/MF$2.25
National Aeronautics and Space Administration, Washington, D.C.
ANALYTICAL TECHNIQUES AND INSTRUMENTATION. A COMPILATION.
26p

Descriptors: (*Materials testing, *Bibliographies), (*Measuring instruments, Bibliographies), Mechanical properties, Stress analysis.

For abstract, see NSA 30 04, number 12186.

PAT-APPL-420 509 PC$4.00/MF$2.25
Department of the Interior, Washington, D.C.
ANGULAR DEVIATION MEASURING DEVICE AND ITS METHOD OF USE.
Patent Application,
James T. Russell. Filed 30 Nov 73, 19p
DOCKET/MIN-1914 DOCKET/MIN-2258
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Optical measuring instruments, *Patent applications, Laser beams, Deflection, Orientation, Rotation.
Identifiers: PAT-CL-356-5.

The patent application relates to a correction device that determines the deflection of an electromagnetic beam relative to its own prior orientation. It determines deviations of a spatially modulated beam by comparing two phase difference readings with each other for the same deflector angular setting.

PATENT-3 738 011 Not available NTIS
Department of the Army Washington D C
THICKNESS-SCRATCH TESTING DEVICE.
Patent,
Elizabeth Anderson, and Richard E. Brown. Filed 23 Aug 71, patented 12 Jun 73, 5p Rept nos. PAT-APPL-174 079,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Test equipment, *Patents, *Coatings, Thickness, Bodies of revolution, Measuring instruments, Defects(Materials), Nose cones, Quality control.
Identifiers: PAT-CL-33-169-F.

The patent describes a machine for testing the thickness of a coating on an object having a curved surface at one or more predetermined locations.

PATENT-3 738 162 Not available NTIS
Department of the Army Washington D C
FATIGUE DAMAGE INDICATOR.
Patent,
James W. Dally, and Gustavo A. Panizza. Filed 10 Sep 71, patented 12 Jun 73, 4p Rept nos. PAT-APPL-179 370,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Indicating instruments, *Patents, *Fatigue(Mechanics), Damage, Detectors.
Identifiers: PAT-CL-73-88-5-R.

This invention relates to an improved apparatus for the determination of fatigue damage in a structure and more particularly to an apparatus having an improved sensing element.

PATENT-3 776 026 Not available NTIS
Atomic Energy Commission, Washington, D.C.
ULTRASONIC FLAW DETERMINATION BY SPECTRAL ANALYSIS.
Patent,
Laszlo Adler, and Hubert L. Whaley. Filed 8 Aug 72, patented 4 Dec 73, 9p PAT-APPL-278 843
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Ultrasonic tests, *Defects, *Patents, Non destructive tests.

Identifiers: PAT-CL-73-67-7.

The patent concerns a method of quantitatively determining the size and orientation of flaws within a material. A broadband pulse having a frequency width of at least several MHz is used for an input pulse from an ultrasonic transducer which is directed toward the immersed test material. The frequency interval between two consecutive frequency maxima of the reflected spectrum due to the difference in distance between each end of the flaw and a receiving transducer is relatable to both the size and orientation of the flaw.

PATENT-3 821 100 Not available NTIS
Department of the Interior, Washington, D.C.
COPPER ION SELECTIVE SENSOR.
Patent,
Albert R. Hilton, and Isaac Trachtenberg. Filed 23 Feb 73, patented 28 Jun 74, 5p PAT-APPL-335 397, DOCKET/SAL-1922
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Patents, *Electrodes, *Water analysis, Sensors, Design, Inorganic sulfides, Copper.
Identifiers: PAT-CL-204-195-G, *Ion selective electrodes, Water pollution detection.

Detection and measurement of copper ions in aqueous solution finds utility in a variety of environmental and industrial applications. Ion selective electrodes in common use are generally based on glassy silicate systems. The sensors of the invention may be used in either membrane or electrode configurations. For this purpose, the glass is employed in the form of a disc having a thickness of about 1.0 to 2.5 mm and a diameter of about 5 to 10 mm. Optimum thickness and size of the disc may, however, vary considerably depending on the specific size and type of apparatus employed, the type of solution to be monitored, the reference electrode, etc., and are best determined experimentally.

RISO-M-1705 PC$4.75/MF$2.25
Danish Atomic Energy Commission, Risoe. Research Establishment.
DIRECT COMPUTATION ON THE KINETIC SPECTROPHOTOMETRY.
J. W. Hansen, and P. B. Pedersen. Mar 74, 31p
U.S. Sales Only.

Descriptors: (*Radiolysis, *Data processing), (*Spectrophotometry, Data processing), Computers, Data acquisition systems, Electron beams, Oscillographs, Pulsed irradiation, Transients.

For abstract, see NSA 30 04, number 09659.

SLA-74-127 PC$4.25/MF$2.25
Sandia Labs., Albuquerque, N.Mex.; Sandia Labs., Livermore, Calif.
THEORY AND PRACTICE OF MEASURING MASS PROPERTIES.
G. R. Jr. Norris. Apr 74, 23p
Contract AT(29-1)-789

Descriptors: (*Mass, *Measuring methods), (*Projectiles, *Accuracy), Physical properties, Rockets, Spin, Trajectories.

For abstract, see NSA 30 04, number 12192.

SLA-74-5034 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
ENERGY DISTRIBUTIONS OF IONS FROM A PULSED VACUUM ARC.
J. T. Grissom. 1974, 6p CONF-740716-2

Descriptors: (*Ion sources, Ion beams), (*Ion beams, *Energy spectra), Aluminium ions, Cations, Chromium ions, Cobalt ions, Emission, Mass, Nickel ions, Oxygen ions, Time dependence.

For abstract, see NSA 30 05, number 13650.

SLL-74-5 PC$4.00/MF$2.25
Sandia Labs., Livermore, Calif.
APPLICATION SOFTWARE FOR ELECTRON MICROPROBE ANALYSIS AND DATA REDUCTION.
D. E. Benthusen, and W. B. Estill. Jun 74, 36p
Contract AT(29-1)-789

Descriptors: (*X-ray fluorescence analyzers, *Data processing), Computers, Data acquisition systems, Electron probes, Microanalysis, X-ray fluorescence analysis.

For abstract, see NSA 30 05, number 12818.

UCID-16475 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
COMPARISON OF THE DATA FROM AN EPITHERMAL NEUTRON LOG TO WATER CONTENT MEASURED FROM IN SITU SAMPLES IN YUCCA FLAT, NEVADA TEST SITE.
J. R. Hearst. 7 May 74, 13p
Contract W-7405-eng-48

Descriptors: (*Moisture gages, *Calibration), (*Alluvial deposits, *Moisture), (*Tuff, Moisture), Boreholes, Density, Drill cores, Epithermal neutrons, Ground water, Nevada test site, Sampling, Well logging.

For abstract, see NSA 30 04, number 09644.

UCID-16485 PC$4.25/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
DEVELOPMENT OF EQUIPMENT FOR HIGH TEMPERATURE RESISTIVITY MEASUREMENTS.
S. Slivinsky. 6 May 74, 22p
Contract W-7405-eng-48

Descriptors: (*Tantalum, Thermal conductivity), (*Thermal conductivity, *Measuring instruments), Pyrometers, Rhenium, Thermocouples, Tungsten, Wires.

For abstract, see NSA 30 04, number 09660.

UCID-16488 PC$8.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
FEASIBILITY STUDY OF A GUNN-DIODE MICROWAVE CAVITY SPECTROMETER AS A FORMALDEHYDE MONITOR. FINAL REPORT.
L. W. Hrubesh. Feb 74, 100p
Contract W-7405-eng-48

Descriptors: (*Formaldehyde, *Monitoring), (*Air pollution, Monitoring), Cavity resonators, Diode tubes, Earth atmosphere, Microwave equipment, Sensitivity, Spectrometers, Stability.

For abstract, see NSA 30 04, number 12104.

UCID-30073 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
COMPUTER-CONTROLLED APPARATUS FOR PERMEABILITY MEASUREMENTS AT CONFINING PRESSURES UP TO 10 EXP 8 PASCAL (10 EXP 3 BAR).
R. Quong, and J. Baker. 7 May 74, 19p
Contract W-7405-eng-48

Descriptors: (*Rocks, *Permeability), (*Porosimeters, *Design), Computers, Nuclear explosions, Porosity, Underground explosions.

For abstract, see NSA 30 04, number 09661.

UCRL-51508 PC$7.60/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
COLLECTION OF ULTRASONIC VELOCITY DATA AS A FUNCTION OF PRESSURE FOR POLYCRYSTALLINE SOLIDS.
R. N. Schock, B. P. Bonner, and H. Louis. 10 Apr 74, 262p
Contract W-7405-eng-48

Descriptors: (*Solids, Ultrasonic waves), (*Ultrasonic waves, *Velocity), Elasticity, Nuclear explosions, Polycrystals, Pressure suppression, Rocks, Seismic waves, Shock waves, Stress analysis, Stresses, Underground explosions.

For abstract, see NSA 30 04, number 12166.

14D. Reliability

SLA-74-5339 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
SOME HUMAN-FACTOR APPLICATIONS TO QUALITY CONTROL IN A HIGH TECHNOLOGY INDUSTRY.
L. V. Rigby, and A. D. Swain. 1974, 20p CONF-740518-1

Descriptors: (*Industry, *Quality control), Inspection, Performance testing, Personnel, Research programs, Sociology, Specifications.

For abstract, see NSA 30 04, number 12196.

14E. Reprography

AD-783 740/4GA PC$6.25/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
MANUAL OF PHOTOGRAPHIC FORMULAS,
V. P. Mikulin. 9 Apr 74, 62p Rept no. FSTC-HT-23-1376-73
Trans. of unidentified Russian language mono., Moscow, 1968 p260-319.

Descriptors: *Color film, *Color photography, *Photographic processing, Photographic processing equipment, Translations, USSR.

This section of the book gives procedures and formulas for development and printing of color films of the standard color process, Orvocolor color process, NIKFI color process, and TsNIIGAiK color process. Formulas, temperatures, and times for each stage of the developing process, as well as special instructions and precautions are given. Miscellaneous information on various aspects of dark rooms and procedures, as well as prevention and treatment measures against injuries to the hands are given.

AD-783 829/5GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
A NEW COLOR FILM TSO-22 AND ITS PROCESSING,
N. E. Chebotareva, A. P. Strelnikova, P. I. Savinova, E. F. Shakirov, and N. V. Starukhina.
12 Mar 73, 16p Rept no. FSTC-HT-23-1333-73
Trans. of Tekhnika Kino i Televideniya (USSR) n8 p33-37 1971.

Descriptors: *Color film, *Photographic processing, Translations, USSR.

The new TsO-22 color converted film, recently introduced, is described. It is intended for amateurs and color television. The main features are that it can be treated in a shorter space of time, it is very stable, and the color image has a high definition, good color rendition, and high color saturation.

AD-783 834/5GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va

ON THE NECESSARY NUMBER AND OPTIMUM LOCATION OF FIDUCIAL MARKS IN AN AERIAL PHOTOGRAPHIC APPEARANCE,
O. V. Portnova. 24 Apr 74, 17p Rept no. FSTC-HT-23-275-74
Trans. of Geodeziya i Kartografiya (USSR) n4 p39-47 1973.

Descriptors: *Aerial photography, Distortion, Corrections, Translations, USSR.

Studies on the optimum number and location of fiducial marks in an aerial photographic apparatus showed that it is possible to obtain minimum residual distortions of the coordinates and altitude distortions when 16 fiducial marks are used, and when the non-linear technique is used for calculating the distortions. When the non-linear technique of calculating distortions is adopted, using eight marks along the perimeter at a distance of 8 cm from each other, the residual errors will amount to plus or minus 0.010 mm on the photograph surface and to 1/7,000 to 1/11,000H in the altitude. If the number of fiducial marks on the perimeter of the picture is increased above 16, this will not increase the precision of determination of the coordinates.

UCRL-75575 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
COLOR MOVIE FACILITY.
S. R. Levine. 26 Mar 74, 5p CONF-740512-9

Descriptors: (*Images, *Motion), Color, Computers, Design, Efficiency, Films, Information, Lawrence livermore laboratory, Optical properties, Photography.

For abstract, see NSA 30 04, number 12091.

15. MILITARY SCIENCES

15A. Antisubmarine Warfare

AD-783 809/7GA PC$8.00/MF$2.25
Naval Postgraduate School Monterey Calif
NANCEE AN APPROACH TO BARRIER SONOBUOY PATTERN OPTIMIZATION.
Master's thesis,
Ralph Conrad Hilzer, Jr. Jun 74, 97p

Descriptors: *Antisubmarine warfare, *Sonobuoys, *Computer programming, Computerized simulation, Computer programs, Optimization, Theses.
Identifiers: NANCEE computer program.

NANCEE is a computer simulation program which uses convolution (or meeting) probabilities to determine which barrier type of sonobuoy pattern has the highest probability of detection for a transiting nuclear submarine. The program assumes that the optimum barrier is a straight-line one, two, or three row sonobuoy pattern containing not more than 48 sonobuoys. The barrier is centered on the submarine's expected line of transit, oriented perpendicular to the submarine's course, and placed far enough ahead of the submarine's position that all pattern sonobuoys are in the water and being monitored before the submarine enters the detection range of the sonobuoy pattern. If more than one barrier is found to have the highest probability of detection, the one with the least number of sonobuoys is selected as optimum. (Modified author abstract)

15B. Chemical, Biological, and Radiological Warfare

AD-783 515/0GA PC$3.00/MF$2.25
Naval Research Lab Washington D C
FOURTH POST-DUMP SURVEY OF THE CHASE X DISPOSAL SITE.
Final rept. on Phase 4,
Ernest C. Czul. Jun 74, 25p Rept no. NRL-MR-2819
See also report dated Nov 72, AD-752 495.

Descriptors: *Waste disposal, *Chemical warfare agents, Oceans, Underwater photography, Nerve agents, VX agent, GB agent.
Identifiers: Ocean waste disposal, Solid waste disposal, Chase X operation.

The Le Baron Russell Briggs was laden with obsolete nerve agent munitions at Sunny Point, N. C. It was sunk in 5010 meters of water on 18 August 1970. This is the report of the fourth post-dump survey of the Briggs site. Hulk photographs taken with the developmental LIBEC system, with the camera a nominal 26 meters above the bottom, provide positive identification of the hulk, and indicate the hulk condition has not changed since the first post-dump survey. Forty-six waters samples, and 5000 bottom photographs including 15 animal photographs taken near the hulk show no evidence of water contamination nor other environmental damage to the site. (Author)

15C. Defense

AD-783 533/3GA PC$3.25/MF$2.25
Naval Weapons Center China Lake Calif
ANALYSIS AND SIMULATION OF THE NWC (NAVAL WEAPONS CENTER) VISUAL TARGET ACQUISITION SYSTEM.
Research rept.,
William O. Alltop. Jul 74, 48p Rept no. NWC-TP-5657

Descriptors: *Target acquisition, *Line of sight, *Pilots, *Aircraft defense systems, Digital simulation, Guided missiles, Helmets, Optical sights, Mathematical analysis.
Identifiers: *AVTAS(Advanced Visual Target Acquisition System), *Advanced visual target acquisition system.

Mathematical analysis and digital computer simulation performed in support of the Visual Target Acquisition System are described. Basic helmet-tracking geometries, mathematical methods for solution, and sensitivity of computed results to angle detector errors are discussed. The geometry, computing algorithms, and detector orientation scheme adopted are presented. Simulation results indicate high dependence of accuracy. (Modified author abstract)

AD-783 827/9GA PC$5.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
ANTIAIRCRAFT DEFENSE HERALD. NUMBER 9, 1973.
19 Feb 74, 167p Rept no. FSTC-HT-23-783-74
Technical trans. of Vestnik Protivovozudushnoi Oborony (USSR) n9 Sep 73. The above journal is translated on a regular basis.

Descriptors: *Antiaircraft defense systems, *USSR, Antiaircraft weapons, Foreign policy, Leadership, Military training, Military aircraft, Guided missiles, Combat readiness, Antiaircraft fire control systems, Fire control computers, Fire control radar, Translations.

The report is a compilation of articles pertaining to the Soviet antiaircraft defense systems and military training.

AD-783 952/5GA PC$3.25/MF$2.25
Stanford Research Inst Menlo Park Calif
Aerophysics Lab
POSTATTACK CONTINGENCY PLANS FOR UNDAMAGED AREAS.
Final rept. Apr 73-Mar 74,
Richard L. Goen, and William L. White. Jul 74, 50p
Contract DAHC20-73-C-0187

Descriptors: *Civil defense, *Postattack operations, Operational readiness, Planning, Emergencies, Nuclear warfare.

The development of contingency plans for undamaged areas in the postattack period after a nuclear attack is the subject of this report. An associated working paper presents a prototype checklist of actions to be performed in response to events under various contingencies. This report presents the rationale and criteria for the contingency plans and gives a synopsis of the plans. (Author)

ORNL-tr-2707 PC$5.45/MF$2.25
Oak Ridge National Lab., Tenn.
TWP 1966: TECHNICAL DIRECTIVES FOR THE CONSTRUCTION OF PRIVATE AIR RAID SHELTERS AND THE 1971 CONCEPTION OF THE SWISS CIVIL DEFENSE.
G. A. Cristy. 1971, 76p
Translated from Swiss translation.

Descriptors: (*Shelters, *Design), (*Switzerland, *Civil defense), (*Fallout shelters, Design), Human populations, National defense, Nuclear explosions, Radiation protection, Subsurface structures.

For abstract, see NSA 30 04, number 12058.

15E. Logistics

AD-783 487/2GA PC$3.00/MF$2.25
Army Electronics Command Fort Monmouth N J
USE OF COMPUTERIZED SUPPORT MODELING IN LOGISTIC SUPPORT ANALYSIS.
Final rept.,
William M. Colon, and Vincent G. Calfapietra. Jul 74, 23p Rept no. ECOM-4228
Presented at the Logistics Research Conference held at George Washington Univ., Washington, D.C., 8-10 May 74.

Descriptors: *Logistics support, *Electronic equipment, *Computerized simulation, Cost effectiveness, Maintainability, Inventory analysis, Life cycles, FORTRAN.
Identifiers: FORTRAN 4 programming language, Design to cost.

During recent years there has been a growing concern within the Department of Defense (DoD) for the consequences of ignoring predicted logistics costs for any given system while it is still in design. In order to deal with the problems of ownership as well as acquisition of a system, one must be able to bridge the gap between the inherent characteristics of the design and environment in which the system will be operated and maintained. A valuable technique for identifying and evaluating the most cost effective options for management decision in this area is the performance of Logistic Support Analysis (LSA) utilizing computerized support modeling. A demonstration of how computerized support modeling (GEMM) can be applied in this manner, is presented by considering the design and development of an electronics system for Army use. Two examples are provided in order to illustrate typical LSA's during both the Advanced Development and Engineering Development phases. (Modified author abstract)

AD-783 508/5GA PC$4.50/MF$2.25
Cabledata Associates Inc Palo Alto Calif
ARPANET MANAGEMENT STUDY: NEW APPLICATION AREAS.
Quarterly technical rept. no. 1, 5 Feb-30 Apr 74,
Carson E. Agnew, Paul Baran, David C. Caulkins, Vinton G. Cerf, and Ronald C. Crane. 5 May 74, 115p Rept no. R-148
Contract F08606-74-C-0043, ARPA Order-2317

Descriptors: *Military procurement, *Logistics support, *Computer applications, Automation, Costs, Savings, Military budgets, Management planning and control.

Identifiers: *ARPA computer network, Defense spending.

This project seeks the discovery of new applications for computer-netting technology that have high payoff to the Department of Defense. The thrust of the project is now upon the consideration of the feasibility of automating certain routine data base/communications functions with the defense procurement process. The report discusses the procedures used in reaching the tentative conclusions; contains a description of the magnitude of the problem; and proposes preliminary hardware configuration design to allow more careful refining of the parameters. (Modified author abstract)

AD-783 522/6GA PC$3.00/MF$2.25
Assistant Secretary of Defense (Program Analysis and Evaluation) Washington D C
SEALIFT PROCUREMENT AND NATIONAL SECURITY (SPANS) STUDY. EXECUTIVE SUMMARY.
2 Aug 72, 14p
See also Part 1, AD-783 523.

Descriptors: *Military transportation, *Merchant vessels, *Procurement, *Department of Defense, Mobilization, Cargo ships, Policies, National defense, Military applications.
Identifiers: *SPANS(Sealift Procurement And National Security), *Sealift procurement and national security.

The Sealift Procurement and National Security (SPANS) Study addresses three basic issues: (1) The financial impact on the general cargo shipping companies of the U.S. Merchant Marine of the competitive negotiated procurement system currently used by the Department of Defense (DoD); (2) the adequacy of shipping assets available to DoD; and (3) the economic desirability of replacing currently government-owned or chartered vessels through the acquisition of new vessels for the Military Sealift Command (MSC) controlled fleet. The SPANS study provided basic research and analysis for recommended courses of action for DoD.

AD-783 523/4GA PC$5.00/MF$2.25
Assistant Secretary of Defense (Program Analysis and Evaluation) Washington D C
SEALIFT PROCUREMENT AND NATIONAL SECURITY (SPANS) STUDY. PART I. UNDERSTANDING THE CURRENT SYSTEMS.
2 Aug 72, 156p
See also AD-783 522 and Part 2, AD-783 524.

Descriptors: *Military transportation, *Merchant vessels, *Procurement, *Department of Defense, Mobilization, Cargo ships, Policies, Contracts, Agreements, Management, Cost analysis.
Identifiers: *SPANS(Sealift Procurement And National Security), *Sealift procurement and national security, *SPAR(Sealift Procurement And Review), *Sealift procurement and review.

Contents: Description of Military Sealift Command (MSC) procurement systems; Chartering procedures; Current issues; Review of SPAR data and allocation system; Analysis of operating results; Industry environment.

AD-783 524/2GA PC$4.75/MF$2.25
Assistant Secretary of Defense (Program Analysis and Evaluation) Washington D C
SEALIFT PROCUREMENT AND NATIONAL SECURITY (SPANS) STUDY. PART II. THE FUTURE SIZE, COMPOSITION, AND PRODUCTIVITY OF THE U.S. MERCHANT MARINE AND FORECASTS OF U.S. WATERBORNE TRADE.
2 Aug 72, 142p
See also Part 1, AD-783 523 and Part 3, AD-783 525.

Descriptors: *Military transportation, *Merchant vessels, *Procurement, *Department of Defense, Cargo, Military equipment, Forecasting, Cargo ships, Military applications.
Identifiers: *SPANS(Sealift Procurement And National Security), *Sealift procurement and national security.

The paper sets forth the results of a projection of Department of Defense dry sealift cargo tonnage for FY 72-76 by amount, commodity, and area of the world. This projection, undertaken as part of the Sealift Procurement and National Security (SPANS) Study, was accomplished in two steps. A basic projection was developed for U.S. troop support cargo and military assistance cargo. Then a number of other factors were reviewed (i.e., possible changes in DOD policies, activities and operations, etc.) that could affect future cargo tonnage but which would not be indicated by the historical data. The basic projection was then revised, and represents SPANS best estimate of DOD sealift tonnage for FY 72-76.

AD-783 525/9GA PC$7.50/MF$2.25
Assistant Secretary of Defense (Program Analysis and Evaluation) Washington D C
SEALIFT PROCUREMENT AND NATIONAL SECURITY (SPANS) STUDY. PART III. DEFENSE IMPLICATIONS. VOLUME III. APPENDIXES E-I.
2 Aug 72, 336p
See also Part 2, AD-783 524 and Part 4, AD-783 526.

Descriptors: *Military transportation, *Merchant vessels, *Procurement, *Department of Defense, Mathematical models, Computer applications, Deployment.
Identifiers: REACT computer program, *SPANS(Sealift Procurement And National Security), *Sealift procurement and national security.

The computerized deployment simulation used in most of the SPANS deployment analyses is a relatively simple model, designated QTYP (Quicker than a Yellow Pad). A more detailed Navy simulation called REACT has been used for purposes of comparison and validation of QTYP results. Annexes A and B hereto are brief summaries of QTYP and REACT logic.

AD-783 526/7GA PC$5.50/MF$2.25
Assistant Secretary of Defense (Program Analysis and Evaluation) Washington D C
SEALIFT PROCUREMENT AND NATIONAL SECURITY (SPANS) STUDY. PART IV. ALTERNATIVE PROCUREMENT SYSTEMS.
2 Aug 72, 180p
See also Part 3, AD-783 525.

Descriptors: *Military transportation, *Merchant vessels, *Procurement, *Department of Defense, Agreements, Cargo ships, Policies, Cost analysis.
Identifiers: *SPANS(Sealift Procurement And National Security), *Sealift procurement and national security.

This section of SPANS focuses on the DOD procurement system for carriage of DOD container and shipping agreement cargoes by the U. S. Flag berth term industry. The U. S. Flag industry is of great importance to the Department of Defense as an integral part of its mobilization base for contingency situations and for the carriage of peacetime cargoes. As explained in Part I-B of SPANS, there is an interrelationship between the DOD procurement system and the U. S. Flag Fleet. This section further explores this interrelationship. The section also examines alternative procurement systems which might fulfill the objectives of SPANS.

AD-783 620/8GA PC$3.75/MF$2.25
Aeronautical Systems Div Wright-Patterson AFB Ohio
AERIAL PORT CONTAINER HANDLING EQUIPMENT REQUIREMENTS AND AIR TRANSPORTABILITY FOR INTERMODAL CONTAINERS.
Technical rept.,
Michael H. Price, and Joseph L. Weingarten. May 74, 73p Rept no. ASD-TR-74-10

Descriptors: *Military transportation, *Air transportation, *Containers, *Handling, Transport aircraft, Loading(Handling), Cargo aircraft, Conveyors, Pallets, Adapters, Platforms, Hoists, Cable assemblies, Containerizing, Cargo.
Identifiers: Ground handling equipment, C-130 aircraft, C-141 aircraft, C-5 aircraft, *Intermodal shipping containers.

The report details aerial port container handling equipment types and quantities recommended for the 1975 to 1980 time period. Included is a five-year phased fund program for the limited quantity of equipment needed for handling projected 1980 container volumes and for a base for future expansion of container handling systems. The report provides a review of tests conducted on land-sea containers by the Air Force to determine air transportability and provides loading and tie-down patterns for various pallet/platform configurations and containers for the C-130, C-141, and C-5 aircraft. (Author)

AD-783 628/1GA PC$3.00/MF$2.25
Air Force Packaging Evaluation Agency Wright-Patterson AFB Ohio
LIGHTWEIGHT PALLET STUDY.
Interim rept. no. 1,
Albert J. Barringer. May 74, 24p Rept no. DSPD-74-2

Descriptors: *Pallets, *Polyethylene plastics, Standardization, Air transportation, Lightweight, Loads(Forces), Damage assessment.

The 40 inch x 48 inch wooden pallets procured under present military specifications cannot be efficiently employed and does not satisfy the current needs. They are too heavy, occupy too much cube and are not standard in size. Air shipment of these wooden pallets results in significant loss of airlift capacity. AFPEA is evaluating available commercial pallet designs and materials in search of a lightweight pallet that will effect a cost savings when compared with a wooden pallet. This report contains results of tests conducted by the Directorate of Packaging on one type of plastic pallet. Six samples were tested all of the same design and material, high density polyethylene. Further tests will be conducted on new commercial pallet designs and materials as they become available. (Author)

AD-783 818/8GA PC$6.00/MF$2.25
Naval Postgraduate School Monterey Calif
SMALL PURCHASE (UNDER $2500.00) PROCESSING MODEL FOR NAVAL SUPPLY CENTERS.
Master's thesis,
Paul Raymond Bosworth. Sep 74, 60p

Descriptors: *Naval procurement, Response, Mathematical models, Data processing, Reliability, Naval logistics, Logistics support, Contracts, Theses.
Identifiers: *Logistics management.

An on-site investigation into the small purchase (under $2500.00) processing procedures of a Naval Supply Center was made to discover a way to reduce the average time a requisition takes from point of receipt by the Center until a purchase action is consumated. Factors considered included: organization structure, requisition input, requisition throughput and a detailed analysis of the purchasing process itself. A model was developed involving organizational shifts of responsibility and changes in processing techniques and emphasis. In addition, several recommendations for specific modifications were made. (Author)

AD-783 825/3GA PC$5.75/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
TECHNOLOGY AND ARMAMENT. NUMBER 6, 1973.
11 Dec 73, 201p Rept no. FSTC-HT-23-670-74
Technical trans. of Tekhnika i Vooruzhenie (USSR) n6 p1-48 Jun 73. The above journal is translated on a regular basis.

Descriptors: *Military equipment, *USSR, Storage batteries, Ammunition, Maintenance, Ships, Vehicles, Military training, Translations.

The report is a compilation of articles relating to logistics activities of the Soviet military system.

AD-783 826/1GA PC$5.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
TECHNOLOGY AND ARMAMENT. NUMBER 11, 1973.
22 Mar 74, 161p Rept no. FSTC-HT-23-819-74
Technical trans. of Tekhnika i Vooruzhenie (USSR) p11 48p Nov 73. The above journal is translated on a regular basis. See also AD-782 369.

Descriptors: *Military equipment, *USSR, Military training, Guided missile personnel, Tanks(Combat vehicles), Projectiles, Translations.

The report is a compilation of articles relating to logistics activities of the Soviet military system.

AD-783 838/6GA PC$7.50/MF$2.25
Naval Postgraduate School Monterey Calif
A PROPOSED METHOD FOR EFFICIENT PRE-LOAD PLANNING FOR CONTAINERIZED CARGO SHIPS.
Master's thesis,
Dewey E. Beliech, Jr. Jun 74, 86p

Descriptors: *Merchant vessels, *Loading(Handling), *Containerizing, Digital simulation, Logistics planning, Mathematical models, Flow charting, Automation, Shipping containers, Naval logistics, Safety, Stability, Loads(Forces), Theses.
Identifiers: *Logistics management.

A program was developed as a proposed model for automating the load-planning process for containerized cargo ships. The model requires an input providing information on the containers to be loaded (weight, destination, type cargo, etc.), the ships' stowage design and hydrostatic properties, and the order of port calls to be made in the voyage. Using this information, each container is assigned to a specific stowage cell in the ship. The assignment method is designed to provide a complete load-plan which meets requirements for ship trim and stability, safety regulations governing hazardous cargo stowage, and minimization or elimination of 'overstow' conditions. The program is presented in flowchart format to promote easy comprehension of the steps involved and allow coding into any programming language desired. (Author)

AD-783 863/4GA PC$8.00/MF$2.25
Naval Postgraduate School Monterey Calif
ANALYSIS OF WORKLOAD PLANNING AND ALLOCATION OF RESOURCES TO SUPPORT FIELD ADMINISTRATION AND INSPECTION OF NAVAL FACILITIES ENGINEERING COMMAND CONSTRUCTION CONTRACTS.
Master's thesis,
Paul William McCullagh, and William Shipman Van Royen. Jun 74, 96p

Descriptors: *Military engineering, *Logistics planning, Resources, Allocations, Forecasting, Contracts, Military requirements, Naval logistics, Theses.
Identifiers: *Construction planning, *Resource allocation, Construction programs.

The thesis explores the relationships between the resources required to administer and execute the Naval Facilities Engineering Command (NAVFAC) construction program and the resources allocated. It describes the current organizational procedures followed by NAVFAC and its Engineering Field Divisions (EFD) in distributing limited resources among the offices of the Resident Officers in Charge of Construction (ROICC). The current system's reliance upon the use of the dollar value of work-in-place is discussed, and additional variables influencing the ROICC workload are examined. Also a proposed classification system is considered as a means of relating specific variables with the ROICC's administrative and inspection workload. Finally possible short-range and long-range methods for improving the allocation procedures are proposed. (Modified author abstract)

AD-783 865/9GA PC$7.50/MF$2.25
Naval Postgraduate School Monterey Calif
INDONESIAN NAVY LOGISTIC SYSTEM.
Master's thesis,
Laut T. Koesnandar. Jun 74, 87p

Descriptors: *Naval logistics, *Indonesia, Logistics planning, Inventory, Policies, Cost analysis, Contracts, Naval procurement, Theses.
Identifiers: *Logistics management.

The Indonesian Navy logistic system as it exists today is a network of people, resources, organizations, and processes, regularly interacting to carry out the vital function of providing adequate logistic support of all kinds to the Naval Operating Forces so that they can accomplish their assigned missions. Selective inventory management is currently being adopted to insure support of the Naval Forces at minimum total cost, and to maximize the cost-saving potential of the selective management policies. The Navy is faced with the requirement of developing and implementing control devices which would assure Parliament that each echelon of management is effectively and efficiently managing all its resources. (Author)

AD-783 866/7GA PC$18.50/MF$2.25
Naval Postgraduate School Monterey Calif
ANALYSIS OF DATA DESCRIBING CONGRESSIONAL RESPONSES TO DOD BUDGET REQUESTS.
Doctoral thesis,
James Robert Capra. Jun 74, 308p

Descriptors: *Department of Defense, *Federal budgets, *Statistical analysis, Military procurement, Allocations, Models, Estimates, Theses.
Identifiers: *Congressional appropriations, *Budget processes.

The thesis represents an attempt to characterize Congressional appropriations for Defense procurement and research and development between 1953 and 1973. The approach used involves formulating alternative models of appropriations as a percentage of requests and deriving point and interval estimates for parameters using robust statistical procedures. The results of the analysis lend support to the hypothesis that the response of the Congress to Defense procurement and research and development budget requests has changed considerably, starting in fiscal 1969 and that the Air Force received uniquely favorable action on its research and development budget requests in the 1957-1969 time period. (Modified author abstract)

AD-783 869/1GA PC$10.25/MF$2.25
Naval Postgraduate School Monterey Calif
DATA ANALYSIS TECHNIQUES FOR A CONTAINERIZED EXPORT CARGO TRANSPORTATION SYSTEM.
Master's thesis,
Thomas Joseph McCarthy, and James Jefferies Carter. Jun 74, 141p

Descriptors: *Department of Defense, *Logistics planning, *Containerizing, *Marine transportation, Computer programs, Distribution, Data processing, Loading(Handling), Shipping containers, California, Cargo, Theses.
Identifiers: *Logistics management, Oakland(California).

This thesis explains various analytical techniques used during research work on the containerized export cargo transportation system at the Military Ocean Terminal, Bay Area, Oakland, California (MOTBA). A series of six computer programs were written in order to summarize data for a distribution audit, while another two programs summarized the data generated from a container stuffing simulation model. Results show that the average age of cargo at stuff is determined by a combination of variables, each of whose significance is related to the degree of activity at the container stuffing station for an individual POD or consignee. (Modified author abstract)

AD-783 932/7GA PC$4.00/MF$2.25
Logistics Management Inst Washington D C
A REVIEW OF GENERAL ACCOUNTING OFFICE DECISIONS ON LIFE CYCLE COSTING.
Jun 74, 87p Rept no. LMI-74-4
Contract SD-321

Descriptors: *Department of Defense, *Government procurement, *Costs, Life cycles, Reviews, Abstracts.
Identifiers: *Logistics management, *Life cycle costing.

The report reviews GAO decisions and reports through 1973 which impact on the application of Life Cycle Costing procedures on Government procurements. In addition to a discussion and overview, 35 specific decisions and reports are abstracted and reviewed. Cross-references and indexes by subject area are also provided. (Author)

AD-783 933/5GA PC$4.00/MF$2.25
Logistics Management Inst Washington D C
CONTROL OF CHANGE WITHIN THE DOD STANDARD LOGISTICS DATA SYSTEMS.
Jul 74, 91p Rept no. LMI-74-8
Contract SD-321

Descriptors: *Logistics, *Information systems, *Standardization, Data management, Computer programming, Control, Centralized, Data bases, Reviews.
Identifiers: Logistics management.

The study was to recommend improvements in the management and control of change of the Military Standard Logistic Data Systems (MILS). The report discusses the MILS, their current operations and problems, the larger view of DoD-wide logistics information, plans and problems, and the state of the technology being used. The author's contention is that the real problem is the lack of coordination and control in developing and operating automated logistics systems, which results in fragmentation and proliferation of hardware and software, redundant use of computers and manpower, inability to take advantage of existing technology, and difficulty in changing the MILS because of the many interfaces. (Modified author abstract)

17. NAVIGATION, DETECTION, COMMUNICATIONS, AND COUNTERMEASURES

17A. Acoustic Detection

AD-783 867/5GA PC$7.25/MF$2.25
Naval Postgraduate School Monterey Calif
AN AUDIO DISPLAY OF PROCESSED ACOUSTIC SIGNALS.
Master's thesis,
George Liell Mager, Jr. Jun 74, 82p

Descriptors: *Display systems, *Sonar equipment, *Target acquisition, Acoustic signals, Signal processing, Audio tones, Coding, Computer programs, Noise, Spectrum analysis, Theses, Fourier transformation.
Identifiers: Fast Fourier transform.

An audio display system using eight tones to encode the output of a digital signal processor is investigated. The purpose of the system is to detect and display an audio tone masked by bandlimited Gaussian noise. The digital processor performs a spectral analysis on the signal using a Fast Fourier Transform. Several hundred experiments were performed using a human listener to monitor the display. The experimental system is capable of displaying the difference between signal, no signal, and signal plus noise conditions. About 80% probability of correct decision by the human observer was achieved for input signals below the detection threshold for an unaided listener. Possible applications to a sonar system are indicated. (Author)

17B. Communication

AD-783 485/6GA PC$3.00/MF$2.25
Army Land Warfare Lab Aberdeen Proving Ground Md
RADIO-TELEPHONE VOX.
Final rept.,
John P. Francis. Jun 74, 11p Rept no. LWL-TR-74-64

Descriptors: *Switches, Tactical communications, Voice communications, Communication equipment, Communication and radio systems, Field wire communications, Remote control, Integrated systems, Interfaces, Interequipment communication.
Identifiers: Voice operated switches, AN/PRC-77.

The Radio-Telephone Vox system provides a radio-wire integration arrangement which does not require a dedicated operator. The Voice Operated Switch (VOX) is unique because, in contrast with existing systems, it is not actuated by either random or systematic ambient noise. It responds only to voice sounds. The present system was evaluated by using it to interface the AN/PRC-77 Tactical Radio and a Field Telephone, TA-312/PT, using field communications wire WD-1 between the radio and the telephone. Prototype development and Engineering/Operational Testing are recommended. (Author)

AD-783 507/7GA PC$4.00/MF$2.25
Stanford Research Inst Menlo Park Calif
SPEECH UNDERSTANDING RESEARCH.
Annual technical rept. 3 Oct 72-31 Mar 74,
Donald E. Walker. May 74, 79p
Contract DAHC04-72-C-0009, ARPA Order-1943
See also report dated Feb 73, AD-757 049.

Descriptors: *Speech recognition, *Intelligibility, Man machine systems, Semantics, Parsers, Words(Language), Transformational grammars, Phonetics.

The goal of the research is the development, over a five-year period, of a speech understanding system capable of engaging a human operator in a natural conversation about a specific task domain. During the second year of the project, a new task domain was chosen: the assembly and repair of small appliances, beginning with a leaky faucet. This change was made to provide for more complex interactions of a user with the system, involving a sequence of subtasks. Major modifications were made in all parts of the system, the most important of which was the development of a new parsing strategy. A description of this second version of the SRI speech understanding system is the primary content of this report. (Modified author abstract)

AD-783 654/7GA PC$3.00/MF$2.25
Air Force Cambridge Research Labs L G Hanscom Field Mass
COMPACT ACOUSTIC SURFACE WAVE FREQUENCY MULTIPLEXERS,
Kenneth R. Laker, A. J. Budreau, and P. H. Carr.
29 Jul 74, 8p Rept no. AFCRL-TR-74-0336
Presented at the Conference of 1974 IEEE International Symposium on Circuits and Systems, Apr 74, p401-403.

Descriptors: *Multiplexing, Acoustic waves, Surface waves, Acoustic filters.
Identifiers: *Multiplexers, *Acoustic surface waves.

The design of low cost, compact surface acoustic wave frequency multiplexers is described. The frequency selective properties of surface wave filters are used to achieve low inband (high-Q) loss and high outband rejection. Observations made on measured transducer input impedances are used to affect a simple insertion loss minimization technique applicable to N coupled surface wave filters. (Author)

AD-783 667/9GA PC$5.50/MF$2.25
Naval Postgraduate School Monterey Calif
ANALYSIS OF CALIFORNIA HIGHWAY PATROL TELECOMMUNICATIONS SYSTEM REQUIREMENTS.
Master's thesis,
Wesley Harold Moore. Jun 74, 50p

Descriptors: *Communication and radio systems, Law enforcement, Management, Telecommunication circuits, California, Information exchange, Requirements, Control, Theses.
Identifiers: Communications management, Telecommunication.

The California Highway Patrol maintains a statewide telecommunications network to satisfy the dual requirements of (1) law enforcement information exchange and (2) administrative message exchange. A description of the existing organization and systems and an introduction into those aspects of telecommunications system analysis which are applicable to CHP requirements are given. As a result of this preliminary analysis it is concluded that the communications network need not follow the line organization, the law enforcement information exchange function should control the network employment, and line switching as currently employed is not acceptable for a real time information system. Finally, an iterative design process intended to result in an effective telecommunications system for CHP is recommended. In this thesis, management policy makers are introduced to those parameters effecting telecommunications system design. In addition, it provides guidance to designers and analysts for the development of a CHP telecommunications system to supersede the existing one. (Author)

AD-783 732/1GA PC$17.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
DIGITAL MODELING IN STATISTICAL RADIO ENGINEERING,
V. V. Bykov. 26 Oct 73, 279p Rept no. FSTC-HT-23-1784-73
Trans. of mono. Tsifrovoe Modelirovanie v Statisticheskoi Radiotekhnike, Moscow, 1971 328p.

Descriptors: *Radio signals, *Signal processing, Digital computers, Mathematical models, Markov processes, Control theory, Radar tracking, Statistical analysis, Translations, USSR.

Mathematical methods for modeling processes common in radio systems are developed for use with multi-purpose digital computers. Efficient algorithms are constructed for digital modeling of radio signals and noise as well as a wide range of random processes. The modeling of random vectors and non-stationary and Markov processes are discussed. Models of random process are considered according to distribution law and within the framework of correlation theory. The modeling of signals and noise as they pass through linear and nonlinear systems are well covered. The principal criteria used in evaluating algorithms are accuracy and the efficient use of computer time. Several applications of digital modeling to statistical radio engineering problems are examined.

AD-783 783/4GA PC$7.75/MF$2.25
Naval Postgraduate School Monterey Calif
A TIME-DOMAIN WAVEFORM DISPLAY/ANALYZER FOR SPEECH RESEARCH.
Master's thesis,
Gary Duane Edmondson. Jun 74, 91p

Descriptors: *Speech recognition, Training devices, Pattern recognition, Speech, Wave analyzers, Time domain, Frequency analyzers, Theses.
Identifiers: Speech analysis.

A system was developed for visually displaying the up-crossings (zero-crossing with positive slope) of a speech acoustic waveform on a storage CRT. Studies of these displays have revealed readily distinguishable visual patterns which are useful for discriminating some consonants, often even in connected speech. Representative displays are included to illustrate the salient features of this visual speech display. Based on preliminary investigations, the system shows promise for application as a speech training aid for deaf children and as a cross-cultural language training aid. Complete design data and schematics for the visual Time-Domain Display/Analyzer are included with recommendations for using the system in evaluating time-domain parameter extractors based on zero-crossings in future speech research. This Time-Domain Waveform Display/Analyzer system provides valuable results for comparing parameter extractors based on zero-crossings and indicates how they might be related iteratively or combined to yield better extractors. (Author)

AD-783 806/3GA PC$10.75/MF$2.25
Naval Postgraduate School Monterey Calif
DIGITAL DISPLAY OF CHARACTERISTIC PARAMETERS OF ACTIVE RADIO FREQUENCY TRANSMISSION SYSTEMS.
Master's thesis,
Darl Paul Patrick. Jun 74, 153p

Descriptors: *Transmission lines, *Measuring instruments, Radiofrequency power, Power meters, Standing wave indicators, Standing wave ratios, Digital systems, Display systems, Monitors, Theses.

A concept for the digital display of radio-frequency parameters present on a transmission line terminated at an antenna is developed. Design criteria for the realization of this concept are established and discussed. The complete electronic and mechanical design, as well as fabrication of a prototype system analyzer is described in detail. Schematic diagrams of all electronic circuitry employed and photographs of prototype equipment are included. Preliminary performance test results are presented and discussed. (Author)

AD-783 815/4GA PC$5.50/MF$2.25
Naval Postgraduate School Monterey Calif
EFFECTS OF ATMOSPHERIC TURBULENCE ON LASER COMMUNICATIONS.
Master's thesis,
Thomas Prater Rankin. Jun 74, 48p

Descriptors: *Laser communications, Acoustooptics, Amplitude modulation, Atmospheric motion, Scintillation, Bandwidth, Signal processing, Mathematical models, Theses.
Identifiers: *Atmospheric attenuation, Helium neon lasers.

A multiplicative model based on the amplitude modulation equation is developed to predict the phenomenon of frequency translation effects of atmospheric scintillation on AM laser communications. An experiment to measure the effects of scintillation on atmospheric laser communications is designed and built. Preliminary results of the experiment are in general agreement with the predictive model. The best agreement is in predicting the scintillation components present in the AM frequency spectrum with some questions raised about the ability of the model to predict the bandwidth of the translated scintillation noise. (Author)

AD-783 912/9GA PC$3.75/MF$2.25
Massachusetts Inst of Tech Lexington Lincoln Lab
FREQUENCY CHOICE FOR TACTICAL SATELLITE COMMUNICATIONS.
Technical note,
Kenneth S. Schneider. 22 Jul 74, 64p Rept no. TN-1974-40 ESD-TR-74-233
Contract F19628-73-C-0002

Descriptors: *Satellite communications, Tactical communications, Radiofrequency, Selection, Frequency allocation, Ultrahigh frequency, L band, X band.

The relative attractiveness of UHF, L-band and X-band for satellite communications is considered. The three frequency bands are compared on the basis of capacity, jamming protection, scintillation, multipath and doppler acquisition. It is concluded that UHF presents the greatest advantages when dealing with earth terminals required to use low-gain antennas. The implications that different types of UHF allocations have on satellite design is discussed. (Author)

AD-783 918/6GA PC$5.00/MF$2.25
LTV Aerospace Corp Dallas Tex Vought Systems Div
FEASIBILITY DEMONSTRATION OF FIBER OPTICS AS APPLIED TO THE SOSTEL (SOLID STATE ELECTRIC LOGIC) DATA HANDLING SYSTEM.
Final rept. 27 Mar 73-9 Jan 74,
Jim R. Perkins, Homer W. Heinzman, and W. Tom Turnage. Jan 74, 159p Rept no. 2-57110/4R-3142
Contract N62269-73-C-0411

Descriptors: *Fiber optics transmission lines, *Data links, Time division multiplexing, Optical data, Fiber optics, Feasibility studies, Data processing, Cables, Communication and radio systems, Avionics, Connectors.
Identifiers: SOSTEL(Solid State Electric Logic), Solid state electric logic.

The study was conducted to develop requirements and techniques for applying fiber optics to the SOlid State Electric Logic (SOSTEL) system in general and to develop a design for demonstrating the application of fiber optics to the SOSTEL II DHS brassboard system in specific. To achieve both objectives, an assessment was made of the characteristics of optical components as applicable to multiplex systems for military aircraft. Components evaluated include optical fibers, light sources, photodiodes, connectors, scramblers and tees. This assessment considered both functional and installation/environmental aspects. This foundation was then used to evolve a number of approaches for interconnecting a multiplex system consisting of two processors and up to 32 remote terminals. The optimum approach was determined to be a radial system with passive branching devices. (Modified author abstract)

AD-783 954/1GA PC-GPO/MF$2.25-NTIS
National Bureau of Standards Washington D C
MULTICOMMODITY NETWORK PLOTTING VIA PROGRAM NETPLT.
Final rept.,
Zella G. Ruthberg, Gloria R. Bolotsky, and William Slater, Jr. Jun 74, 71p Rept no. NBS-TN-829
Sponsored in part by Defense Communications Engineering Center, Reston, Va. Library of Congress catalog card no. 74-600074.
Availability: Paper copy available from GPO.

Descriptors: *Communications networks, *Computer programs, *Plotting, Subroutines, FORTRAN, Computer graphics.
Identifiers: NETPLT computer program, Calcomp plotters.

In the design and operation of complex networks, it is often an advantage to obtain a visual representation that readily allows for a quick appraisal of the network's current configuration or of its changed appearance due to variations of its nodes and links. The program NETPLT enables a user to plot the two leading characteristics of any multicommodity network: (1) nodes and links and (2) the multiple source-sink structure (multicommodity property). The unique feature of NETPLT is its unambiguous planar representation of links. NETPLT uses an arc of a circle instead of the usual straight line, to represent a connector between a node pair (link). (Author)

COM-74-11435/6GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
SPEECH RECOGNITION BY COMPUTER: A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1964-Jul 74,
David W. Grooms. Sep 74, 153p* NTIS/WIN-74/070

Descriptors: *Speech recognition, *Computers, *Bibliographies, Voice communication, Linguistics, Phonology, Phonemes, Acoustic properties, Computer programming, Data processing, Artificial intelligence, Speech analysis, Compandor transmission, Waveform recognition.
Identifiers: Natural language, Speech compression.

This bibliography contains 142 selected abstracts of research reports retrieved using the NTIS online search system - NTISearch. The report presents research investigating the recognition, synthesis, and processing of speech. The research includes the acoustical, phonological and linguistic processes necessary in the conversion of the various waveforms by computers.

COM-74-50634/6GA PC-GPO/MF$2.25-NTIS
National Bureau of Standards, Washington, D.C. Systems and Software Div.
MULTICOMMODITY NETWORK PLOTTING VIA PROGRAM NETPLT.
Final technical note,
Zella G. Ruthberg, Gloria R. Bolotsky, and William Slater, Jr. Jun 74, 70p NBS-TN-829
Sponsored in part by Defense Communications Agency, Arlington, Va. Library of Congress Catalog Card No. 74-600074.
Paper copy available from GPO $1.10 as C13.46:829.

Descriptors: *Telecommunication, *Network analysis theory, *Computer programs, Network flows, Graphic methods, FORTRAN, Algorithms.
Identifiers: NETPLT computer program, AUTOVON, *Communications networks, FORTRAN 4 programming language.

In the design and operation of complex networks, it is often an advantage to obtain a visual representation that readily allows for a quick appraisal of the network's current configuration or of its changed appearance due to variations of its nodes and links. The program NETPLT enables a user to plot the two leading characteristics of any multicommodity network: (1) nodes and links and (2) the multiple source-sink structure (multi-commodity property). The unique feature of NETPLT is its unambiguous planar representation of links. NETPLT uses an arc of a circle instead of the usual straight line, to represent a connector between a node pair (link).

PATENT-3 735 359 Not available NTIS
Department of the Army Washington D C
DIGITAL CONFERENCE BRIDGE.
Patent,
Leo H. Wagner. Filed 30 Jul 71, patented 22 May 73, 7p Rept nos. PAT-APPL-167 740,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Conferencing(Communications), *Patents, Telecommunication circuits, Pulse communications, Digital systems, Signal processing.
Identifiers: PAT-CL-340-172-5.

The patent concerns operating a plurality of spaced digital voice communication equipments of the same type in a conference hookup at a digital conference bridge. All of the communication equipments are known in the art and operate at the same sampling or modulation rate. The novel digital conference bridge has a line buffer store and an input character register per conferee, an electronic scanner switch and logic circuit for selecting an output signal from among the input registers at programmed time intervals and to transfer the selected output signal to all of the conferees through one output character register and one output buffer store.

PB-235 218/5GA PC$10.00/MF$10.00
Dittberner Associates, Bethesda, Md.
INTERCONNECTION. AN ECONOMIC IMPACT ANALYSIS.
1973, 202p*
Contract OTP-SE-72-113

Descriptors: *Telephone systems, *Economic analysis, *United States, Telephone equipment, Telecommunication, Residential buildings, Commercial buildings, Public buildings, National government, Local government, Tariffs, Revenue, Rates(Costs), Common carriers, Regulations, Taxes, Modems, Data processing terminals, Market research.
Identifiers: *Interconnection(Telephone), COAM(Customer Owned and Maintained Equipment), Customer owned and maintained equipment, Private branch exchange, PBX(Private Branch Exchange).

The report sets forth a methodology for evaluating the economic effects of subscriber-owned terminal equipment which is interconnected with the telephone common carrier network in the United States. These effects are identified with categories of interested parties e.g., general public telephone users, communications common carriers, manufacturers and distributors of equipment to be interconnected, government agencies, and users or buyers of interconnected equipment.

17C. Direction Finding

AD-783 489/8GA PC$3.25/MF$2.25
Army Electronics Command Fort Monmouth N J
INVESTIGATION OF FRIENDLY POSITION LOCATION TECHNIQUES UTILIZING NET RADIO COMMUNICATIONS.
Final technical rept.,
William M. Goodall. Jul 74, 28p Rept no. ECOM-4233

Descriptors: *Position finding, *Distance measuring equipment, *Tactical reconnaissance, Position(Location), Radio equipment, Delay, Tactical warfare, Very high frequency.
Identifiers: Trilateration, AN/VRC-12.

The report summarizes techniques for position location by trilateration using narrowband steady state methods suitable for use with Radio Set AN/VRC-12 which is a tactical Net Radio operating in the 30 to 76 MHz frequency range. Narrowband Position Location Systems, PLS, can be used when the equipment delay is measured or compensated, using suitable delay calibration. Two types of three-station PLS were investigated.

The optimum type provides all data needed for PLS at the main base station without need for transmission of data over voice circuits of the three-station PLS. A section on Experimental Studies and Results is included. (Author)

AD-783 708/1GA PC$3.75/MF$2.25
Illinois Univ Urbana Radio Research Lab
A CROSS-CORRELATION METHOD FOR COMPUTER-AIDED SELECTION OF CDAA SUM PATTERNS.
Technical rept.,
S. Diane Smith, Albert D. Bailey, Edward W. Ernst, and Chester S. Gardner. Jul 74, 68p Rept nos. UILU-ENG-74-2549, RRL-Pub-450
Contract N00014-67-A-0305-0002
Also available as Technical report no. 48.

Descriptors: *Radio direction finders, Antenna arrays, Antenna radiation patterns, Correlation techniques, Computer applications, Azimuth.
Identifiers: Computer aided selection, Circularly disposed antenna arrays.

A circularly disposed antenna array/radio direction finding (CDAA/RFD) system (Wullenweber) can be used to determine the azimuthal angle of arrival for an incoming signal. Unfortunately, there will always be a certain degree of inaccuracy in the resulting value since not all arriving signals will be perfect single-mode data. This report deals with one possible method of determining when to accept the angle-of-arrival value computed from a SUM pattern of the CDAA. Filtering and cross-correlating the data with an ideal pattern are performed. The resulting cross-correlation coefficient gives a value upon which an acceptance or rejection decision can be made. (Author)

17D. Electromagnetic and Acoustic Countermeasures

AD-783 858/4GA PC$8.75/MF$2.25
Naval Postgraduate School Monterey Calif
THE ELECTRONIC WARFARE APPLICATION OF SPECIAL PURPOSE MICROPROGRAMMED MINI-COMPUTERS.
Master's thesis,
Paul David Frazer. Jun 74, 113p

Descriptors: *Electronic warfare, *Minicomputers, Surveillance, Threat evaluation, Radar signals, Signal processing, Microprogramming, Computer programs, Theses, FORTRAN.
Identifiers: IBM 360 computers.

An algorithm for the application of a special purpose minicomputer to the automatic analysis and initial classification of electronic warfare signals is developed. The minicomputer assembly language version of this algorithm is presented. A FORTRAN program which generates realistic data for signal analysis is described. Using the simulated data and an instruction level simulation program, the algorithm is tested using an IBM 360 computer. Microprogramming techniques are presented which optimize the minicomputer application. (Author)

17G. Navigation and Guidance

AD-783 554/9GA PC$3.00/MF$2.25
Coast Guard Research and Development Center Groton Conn
PRELIMINARY INVESTIGATION OF TEMPORAL AND CHROMATIC METHODS OF MARKING CHANNELS.
Final rept.,
Robert Bates. Apr 74, 22p Rept no. CGR/DC-11/74 USCG-D-96-74

Descriptors: *Inland waterways, *Channels(Waterways), *Navigational lights, Coast Guard research, Buoys, Lights, Chromaticity, Color separation, Marker lights.

This report summarizes the results of initial research designed to determine the best methods for marking straight lighted channels. Two methods were examined: regulated time flashing (temporal) and color flashing (chromatic). In the temporal method all (30) test observers chose the ordered systems (sequential and simultaneous) superior to the unordered systems (random, random-sequential, and random-simultaneous). Within the test conditions for ordered systems, sequential flashing was chosen best. In the chromatic method a two color combination for channel marking was chosen best: a white-red system against a lighted background and a green-red or white-red system against a dark background. This preliminary work shows an advantage to ordered temporal systems of marking channels as well as the advantage of a two color system. The results of this research could provide guidance for design of future channel lighting systems. (Author)

AD-783 576/2GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
BASIC PROBLEMS IN THE DEVELOPMENT OF A LASER GYROSCOPE,
V. V. Bogdanov, V. G. Brykov, V. I. Matrosov, A. V. Mochalov, and D. K. Mynbaev. 27 Jun 74, 13p Rept no. FTD-HT-23-1205-74
Edited trans. of Elektrotekhnicheskii Institut, Leningrad. Izvestiya (USSR) v69 n101 p69-74 1972, by Catherine M. Barber.

Descriptors: *Gas lasers, *Gyroscopes, Photoreceptors, Resonators, Mirrors, Inertial navigation, Translations, USSR.
Identifiers: *Laser gyroscopes.

AD-783 581/2GA PC$5.00/MF$2.25
Boeing Commercial Airplane Co Seattle Wash
ATS-5 MULTIPATH/RANGING/DIGITAL DATA L-BAND EXPERIMENTAL PROGRAM - PROGRAM SUMMARY.
Final rept. Apr 69-Jul 73.
Apr 73, 153p Rept no. D6-60176 FAA-RD-73-57
Contract DOT-FA69WA-2109
See also AD-783 582.

Descriptors: *Air traffic control systems, *Radio links, *Range finding, *Multipath transmission, Digital systems, Satellites(Artificial), Data transmission systems, Scintillation, Data reduction, L band, Surveillance, Aircraft, Data links.
Identifiers: Tone ranging, ATS-5 satellite.

A summary description of an L-band multipath/ranging/diital communication experimental program is given. Tests involved an FAA KC-135 jet airplane, the NASA ATS-5 satellite, the NASA/Rosman ground station, and the FAA NAFEC facility. All tests were conducted within the 1545- to 1655-MHz frequency band allocated for future aeronautical services. Tests included 30 overocean multipath and ranging flights in the North Atlantic region, 16 digital data communication tests, eight overland multipath flights including both summer and winter conditions, six overocean multipath flights in the Pacific region, and nine fixed-link scintillation tests. Summary test results are presented and discussed relative to theoretical expectation. (Author)

AD-783 582/0GA PC$8.50/MF$2.25
Boeing Commercial Airplane Co Seattle Wash
ATS-5 MULTIPATH/RANGING/DIGITAL DATA L-BAND EXPERIMENTAL PROGRAM. PHASE I. EXPERIMENTAL PROGRAM - AIRCRAFT COMMUNICATIONS/SURVEILLANCE VIA SATELLITE AT L-BAND.
Final rept. 23 Apr 69-1 Jun 70.
Apr 73, 405p Rept no. D6-60177 FAA-RD-73-57-I
Contract DOT-FA69WA-2109
See also AD-783 581 and AD-783 583.

Descriptors: *Air traffic control systems, *Radio links, *Multipath transmission, *Surveillance, Digital systems, Voice communications, Antennas, Range finding, L band, Data links, Data transmission systems, Aircraft, Satellites(Artificial), Data reduction.
Identifiers: Tone ranging, ATS-5 satellite.

A program definition study (phase I) for an experimental flight test program intended to establish the capabilities and limitations of an L-band aeronautical satellite system has been completed. Three experiments are defined: aircraft position surveillance via satellite, voice and digital communications via satellite, and multipath propagation characterization. The test program was designed to use the NASA ATS-5 satellite, scheduled for launch in August 1969, and two FAA airplanes, a KC-135 and a DC-6B. Ground terminals were to be located at the NASA Mojave facility in California and at the FAA NAFEC facility near Atlantic City, N.J. Descriptions of the aircraft experimental L-band antennas and functional requirements for the airborne and ground-based terminals are given. Due to failure of the ATS-5 satellite to achieve proper stabilization in orbit, the test program and hardware described herein were extensively revised prior to implementation and flight test as described in subsequent program phases. (Author)

AD-783 583/8GA PC$4.50/MF$2.25
Boeing Commercial Airplane Co Seattle Wash
ATS-5 MULTIPATH/RANGING/DIGITAL DATA L-BAND EXPERIMENTAL PROGRAM. PHASE II. TERMINAL DESIGN AND FLIGHT TEST PLAN FOR PHASE I PROGRAM. VOLUME I. TERMINAL DESIGN.
Final rept. 1 Jul 69-1 Jun 70.
Apr 73, 112p Rept no. D6-60178-1 FAA-RD-73-57-II-Vol-I
Contract DOT-FA69WA-2109
See also AD-783 582 and AD-783 584.

Descriptors: *Air traffic control systems, *Communication terminals, Radio links, Specifications, Range finding, Satellites(Artificial), Radio equipment, Antennas, Aircraft, Surveillance, Digital systems, Data transmission systems, Data links, L band, Flight testing.
Identifiers: Tone ranging, ATS-5 satellites.

Airborne and ground station terminal designs for implementation of the phase I test plan are defined. Hardware configurations for the KC-135, DC-6B, and the NAFEC and Mojave ground terminals are described. Preliminary subsystem performance specifications, intended to form the basis for either in-house development or outside procurement, are given. Due to failure of the ATS-5 satellite to achieve proper stabilization in orbit, extensive program revisions occurred prior to the phase IV flight test program. Only a few of the hardware items described herein were actually procured or fabricated, and the overall terminals were not implemented. (Author)

AD-783 584/6GA PC$4.50/MF$2.25
Boeing Commercial Airplane Co Seattle Wash
ATS-5 MULTIPATH/RANGING/DIGITAL DATA L-BAND EXPERIMENTAL PROGRAM. PHASE III. DEFINITION OF REVISED EXPERIMENT, TERMINAL DESIGN, AND SUBSYSTEM PERFORMANCE CHARACTERISTICS.
Final rept. 1 Jun 70-1 Mar 71.
Apr 73, 113p Rept no. D6-60179 FAA-RD-73-57-III
Contract DOT-FA69WA-2109
See also AD-783 583 and AD-783 585.

Descriptors: *Air traffic control systems, *Multipath transmission, *Range finding, Radio links, Attenuation, L band, Antennas, Satellites(Artificial), Communication terminals, Radio equipment, Digital systems, Surveillance, Aircraft, Aircraft antennas.
Identifiers: Tone ranging, ATS-5 satellite.

A revised overocean multipath propagation and cw tone-ranging flight test experiment specifically designed to accommodate the ATS-5 spin is described. The test program will employ the 1540- to 1660-MHz frequency band and will involve an FAA KC-135 jet airplane, the spinning NASA ATS-5 satellite, and a ground station at the FAA NAFEC facility. Four experimental L-band antennas are designed for installation on the KC-135: a steerable quad helix, a crossed-dipole multipath array, and two low-grain slot dipoles. The ground station and airborne terminal hardware are defined. Detailed measured performance data are given for the antennas and major equipment subsystems. The field test program and analysis of the data acquired are accomplished under phases IV and V of the contract. (Author)

AD-783 585/3GA PC$4.00/MF$2.25
Boeing Commercial Airplane Co Seattle Wash
ATS-5 MULTIPATH/RANGING/DIGITAL DATA L-BAND EXPERIMENTAL PROGRAM. PHASE IV, FLIGHT TEST PROCEDURES AND FLIGHT TEST SUMMARY.
Final rept. 1 Mar 71-1 Jun 72.
Apr 73, 77p Rept no. D6-60180 FAA-RD-73-57-IV
Contract DOT-FA69WA-2109
See also AD-783 584 and AD-783 586.

Descriptors: *Air traffic control systems, *Flight testing, Radio links, Range finding, Multipath transmission, Digital systems, Satellites(Artificial), Aircraft, L band, Surveillance.
Identifiers: Tone ranging, ATS-5 satellite.

The flight test phase of the multipath/ranging/digital data L-band experimental program is described. Special instrumentation, installation design, and initial terminal checkout procedures are discussed. Flight testing began in April 1971 using the satellite L-L NBFT mode but was reconfigured for the CXL mode following failure of the satellite L-band receiver. The link configuration changes and hardware modifications required are described. The remaining 27 flights were conducted between August 1971 and May 1972 using the modified link and the CXL satellite mode. The flight test organization, flight test geometries, detailed test plans, NASA support requirements, and typical operations schedules for the various tests are given. A summary tabulation of the data flights and a discussion of the in-flight system calibration procedures is included. (Author)

AD-783 586/1GA PC$4.75/MF$2.25
Boeing Commercial Airplane Co Seattle Wash
ATS-5 MULTIPATH/RANGING/DIGITAL DATA L-BAND EXPERIMENTAL PROGRAM. PHASE IVD, ADDITIONAL TESTS. VOLUME 1. SATELLITE/AIRCRAFT L-BAND DATA COMMUNICATION TESTS.
Final rept. 28 Jun 72-28 Jul 73.
Apr 73, 133p Rept no. D6-60186-1 FAA-RD-73-57-IVD-Vol-1
Contract DOT-FA69WA-2109
See also AD-783 585 and AD-783 587.

Descriptors: *Air traffic control systems, *Radio links, Data transmission systems, Digital systems, Data links, L band, Satellites(Artificial), Errors, Phase shift circuits, Multipath transmission.
Identifiers: Phase shift keying, ATS-5 satellite.

A digital data transmission experiment conducted between the NASA/Rosman ground station and an FAA KC-135 jet airplane at L-band via the geostationary NASA ATS-5 satellite is described. Sixteen tests were conducted during March and April 1973. All tests employed PSK transmission of alphanumeric text and pseudonoise sequences over the link to obtain a quantitative comparative evaluation of CPSK, DECPSK, and DPSK detection techniques. Significant results included performance characterization of the detection techniques for both the AWGN channel and the Rician fading channel in the presence of overocean multipath. Reception of messages using slot dipole antennas on the aircraft was also successfully demonstrated. Results are presented and discussed relative to theoretical expectation. (Author)

AD-783 587/9GA PC$4.00/MF$2.25
Boeing Commercial Airplane Co Seattle Wash
ATS-5 MULTIPATH/RANGING/DIGITAL DATA L-BAND EXPERIMENTAL PROGRAM. PHASE IVD. ADDITIONAL TESTS. VOLUME 2. OVERLAND MULTIPATH, PACIFIC MULTIPATH, SCINTILLATION TESTS.
Final rept. 28 Jun 72-28 Jul 73.
Apr 73, 100p Rept no. D6-60186-2 FAA-RD-73-57-IVD-Vol-2
Contract DOT-FA69WA-2109
See also AD-783 586 and AD-783 588.

Descriptors: *Air traffic control systems, *Multipath transmission, Scintillation, L band, Satellites(Artificial), Radio links.
Identifiers: ATS-5 satellite.

Experimental results at L-band are presented for eight overland multipath flights, six overocean multipath flights in the Pacific region, and a series of fixed-link scintillation measurements within the 1545- to 1655-MHz frequency band allocated for future aeronautical satellite services. Test signals were transmitted from the NASA/Rosman ground station to an FAA KC-135 jet airplane via the NASA ATS-5 satellite. Overland multipath data were acquired at elevation angles between 14 degrees and 19 degrees over marshy, hilly, and mountainous terrain in northern Canada and Alaska for both summer and winter conditions. These data together with the Pacific region overocean multipath data were analyzed to determine scatter reflection coefficients, circular polarization sense reversal characteristics, and power spectral density. Scintillation test data were analyzed to determine signal time histories, amplitude histograms, S2 scintillation parameter, statistical fade depths, and power spectra. (Author)

AD-783 588/7GA PC$6.00/MF$2.25
Boeing Commercial Airplane Co Seattle Wash
ATS-5 MULTIPATH/RANGING/DIGITAL DATA L-BAND EXPERIMENTAL PROGRAM. PHASE V. MULTIPATH/RANGING ANALYSIS AND RESULTS.
Final rept. 1 Jun-30 Sep 72.
Apr 73, 243p Rept no. D6-60181 FAA-RD-73-57-V
Contract DOT-FA69WA-2109
See also AD-783 587.

Descriptors: *Air traffic control systems, *Multipath transmission, *Range finding, L band, Radio links, Surveillance, Aircraft, Satellites(Artificial).
Identifiers: Tone ranging, ATS-5 satellite.

Experimental results are presented for 30 multipath and ranging test flights involving an FAA KC-135 jet airplane, the NASA ATS-5 satellite, the NASA/Rosman ground station, and the FAA NAFEC facility. Tests included overocean multipath measurements and one-way tone ranging between the ground station and airplane via the satellite. Data were acquired over the North Atlantic at satellite elevation angles between 9 degrees and 31 degrees, within the 1545 to 1655 MHz frequency band allocated for future aeronautical satellite services. Significant multipath experiment results include determination of the multipath signal amplitude statistics, power spectral density, polarization properties, and selective fading characteristics. Multipath results are correlated with theoretical predictions based on use of the physical optics scatter model. Ranging experiment results include performance confirmation of a narrow-band cw tone ranging technique, characterization of the effect of multipath on ranging accuracy, and concept demonstration using low-gain slot dipole aircraft antennas. Comparison of experimental ranging results with theoretical predictions is given. (Author)

AD-783 615/8GA PC$3.25/MF$2.25
Frank J Seiler Research Lab United States Air Force Academy Colo
A ROOT LOCUS ANALYSIS OF A SEISMIC ISOLATION CONTROL SYSTEM,
Dino A. Lorenzini, and Michael W. Wynne. May 74, 44p Rept no. SRL-TR-74-0010

Descriptors: *Inertial guidance, *Gyroscopes, Test facilities, Seismometers, Tiltmeters, Pneumatic devices, Closed loop systems, Linear systems.
Identifiers: *Seismic isolation.

More advanced inertial guidance systems have established a requirement for ultra-precise components. The requisite components must be tested for precision, accuracy and reliability. In order to properly judge the relative precision of gyroscopes, an extremely 'quiet' facility needs to be established. This report presents a classical, linear systems analysis of the Seismic Isolation Gyro Test Facility of the Frank J. Seiler Research Laboratory. The analysis technique used is the 'Root Locus' technique. The analysis commences with the modeling of the individual system components and their combination into sub-systems for separate loop analysis. The loops are identified by their principal sensor; the Tiltmeter loop and the Seismometer loop. Following the independent analysis, these loops are combined using 'inside-out' rationale, where the tiltmeter loop is considered as the 'inside' loop. The combination analysis identifies a set of solutions, as well as a possible optimum solution for the aggregate compensation problem. (Modified author abstract)

AD-783 619/0GA PC$4.75/MF$2.25
Stanford Research Inst Menlo Park Calif
DIODE BEACON TECHNIQUES.
Final rept. 31 May 72-30 Sep 73,
Ashok E. Gorwara. Jun 74, 144p RADC-TR-74-147
Contract F30602-72-C-0444

Descriptors: *Air traffic control systems, *Radar beacons, Transponders, Radar equipment, Airport radar systems, Microwave equipment, Solid state electronics, IMPATT diodes, Microwave oscillators, Target detection, Radar clutter, Multipath transmission, Signal processing, Ku band.

In recent years, there has been a great interest in physically small, low-cost, low-energy-consuming electronic markers for tagging materials and vehicles, for air traffic control on the ground, and for surveillance or tracking of personnel over a limited area. The purpose of the study was to investigate the state of the art in low-cost beacon components that will provide a target-like signal for a maximum range of five miles in various weather conditions when they are illuminated by search, tracking, or surface-detection radars. (Modified author abstract)

AD-783 624/0GA PC$3.25/MF$2.25
Litton Systems Inc Woodland Hills Calif Guidance and Control Systems Div
SUPPLEMENTAL REPORT ON THE VIBRAGIMBAL MULTISENSOR ENVIRONMENTAL TESTS AND RAPID REACTION.
Technical rept. 26 Feb-22 Jun 73,
George R. Manoly, and Wing C. Wong. Sep 73,
33p AFFDL-TR-73-107
Contract F33615-70-C-1633
See also report dated Apr 72, AD-764 768.

Descriptors: *Inertial guidance, *Stabilized platforms, Accelerometers, Gimbals, Gyroscopes, Reaction time, Environmental tests.
Identifiers: *Design.

This report describes the test procedures and results of environmental tests and rapid reaction of the vibragimbal multisensor, the multisensor being an instrument which provides two axes of angular reference and two axes of acceleration information in a single small package. (Author)

AD-783 630/7GA PC$3.00/MF$2.25
Ohio Univ Athens Dept of Electrical Engineering
INVESTIGATIONS TO PROVIDE IMPROVED GLIDE SLOPE OPERATION DURING PERIODS OF GROUND-PLANE SNOW COVER. VOLUME I. SUMMARY AND CONCLUSIONS.
Summary rept. 1972-1973,
Richard H. McFarland. Apr 74, 8p Rept no. EER-5-17 FAA-RD-74-69-Vol-I
Contract DOT-FA69WA-2066
See also Volume 2, AD-783 631.

Descriptors: *Glide path systems, *Glide slope, Environmental tests, Snow, Utilization.

A summary of conclusions and recommendations is given for providing improved operation of image glide slopes during periods when the reflecting ground plane is covered with snow. These conclusions and recommendations have been derived from theory developed and experiments conducted during nine years of investigation. (Author)

AD-783 631/5GA PC$3.75/MF$2.25
Ohio Univ Athens Dept of Electrical Engineering
INVESTIGATIONS TO PROVIDE IMPROVED GLIDE SLOPE OPERATION DURING PERIODS OF GROUND-PLANE SNOW COVER. VOLUME II. DETAILS OF 1972-1973 INVESTIGATIONS.
Final rept. 1972-1973,
J. J. Battistelli, and Richard H. McFarland. Apr 74, 65p Rept no. EER-5-18 FAA-RD-74-69-Vol-2
Contract DOT-FA69WA-2066
See also Volume 1, AD-783 630.

Descriptors: *Glide path systems, *Glide slope, Environmental tests, Snow, Utilization.

The results of the 1972-73 Ohio University Snow Data Collection program for investigating the effects of ground-plane snow covers on image glide slopes are presented. The investigation involved the most extensive instrumentation to date for gathering continuous, detailed information on glide slope performance in both the near and far-fields. Experimental results were consistent with theory previously developed and provide a basis for some useful conclusions and recommendations, viz, effects of snow depth less than ten inches are not significant in terms of far-field performance. However, conventional near-field monitors may produce out-of-tolerance indications. Integral monitoring is found to provide excellent service and may be regarded as highly reliable and representative for depths up to at least 10 inches. For greater depths no conclusive, consistent data is yet available. (Author)

AD-783 632/3GA PC$4.75/MF$2.25
Naval Ammunition Depot Crane Ind
SLANT VISUAL RANGE (SVR)/APPROACH LIGHT CONTACT HEIGHT (ALCH) MANAGEMENT SYSTEM: EVALUATION IN FOG.
Final rept. on Phase 2.
Jul 74, 134p FAA-RD-74-7
Supersedes report dated Jan 74, AD-777 307.

Descriptors: *Air traffic control systems, *Slant range, Visibility, Fog, Meteorological instruments, Measurement.
Identifiers: *Slant visual range, Approach light contact height, Transmissometers.

Systems with potential for predicting SVR/ALCH were tested at the National Aviation Facilities Experimental Center (NAFEC), Federal Aviation Administration, Department of Transportation, Atlantic City, New Jersey. These systems' estimation of the slant path transmittance were compared to data being generated by NBS transmissometers located at several levels on nearby 160-foot towers. The transmittance values predicted by the systems being evaluated were used to compute RVR and SVR data. The results of these computations were compared to the actual RVR-SVR calculated based upon NBS transmissometer measurement. The report contains data on the stratification of the fogs observed at NAFEC during the test duration. Pilot eye response is considered with emphasis on techniques of determining the pilot's adaptational level. The pilot's adaptation level calculation is combined with (1) the extinction rate measurements, (2) pilot's eye response and (3) the geometry of the scenario in order to form ALCH and SVR algorithms. (Author)

AD-783 633/1GA PC$3.25/MF$2.25
National Aviation Facilities Experimental Center Atlantic City N J
INVESTIGATION OF RADIOFREQUENCY INTERFERENCE TO THE BACKUP EMERGENCY COMMUNICATION EQUIPMENT AT THE ELWOOD, NEW JERSEY, LONG-RANGE RADAR SITE.
Final rept. Mar 73-Jan 74,
George Apostolakis, and Arthur Moss. Jul 74, 36p Rept no. FAA-NA-74-13 FAA-RD-74-115

Descriptors: *Air traffic control systems, *Communication equipment, *Radiofrequency interference, Digitizers, Search radar, Antennas, Electromagnetic shielding, Transmitter-receivers, Field intensity, Very high frequency, Ultrahigh frequency, Electromagnetic compatibility.
Identifiers: ARSR-2 radar.

The purpose of this study was to investigate radiofrequency interference (RFI) to the backup emergency communication (BUEC) equipment at operational long-range radar sites (LRRS). The investigative effort consisted of determining the sources of RFI, the frequency and intensity of RFI at various locations within the LRRS, and the BUEC frequencies affected by the RFI. Various methods of eliminating or reducing the effects of this RFI were studied. This report discusses the methodology and results of these RFI studies.

AD-783 638/0GA PC$14.00/MF$2.25
Intermetrics Inc Cambridge Mass
CIRIS TRANSPONDER DEPLOYMENTS FOR TESTING INERTIAL NAVIGATION SYSTEMS.
Final technical rept.,
William S. Widnall, and Richard T. Ku. 13 Aug 74, 217p Rept no. IR-89-74 AFSWC-TR-74-22
Contract F29601-73-C-0089

Descriptors: *Inertial navigation, Transponders, Deployment, Test equipment, Accuracy, Errors, Range finding, Precision, Position finding, Velocity, Attitude indicators, Kalman filtering, Flight testing.

The completely integrated reference instrumentation system (CIRIS) system at Holloman Air Force Base provides a highly precise reference for the flight testing of navigation and guidance systems. CIRIS subsystems include an inertial navigation system (INS), a Doppler velocity sensor, and a precision ranging system. This report evaluates the effect of the deployment of the transponders of the precision ranging system on CIRIS position/velocity/attitude accuracy and on the estimation of sources of error in an INS under test. Position accuracy with basic two and three transponder deployments is explored with a simple position fix error analysis. Position/velocity/attitude accuracy for a variety of multi-transponder deployments is evaluated using the CIRIS post-flight processor on simulated CIRIS flight data. The performance improvement with Doppler data is presented. (Modified author abstract)

AD-783 652/1GA PC$3.75/MF$2.25
Boeing Commercial Airplane Co Seattle Wash
ATS-5 MULTIPATH/RANGING/DIGITAL DATA L-BAND EXPERIMENTAL PROGRAM. PHASE II. TERMINAL DESIGN AND FLIGHT TEST PLAN FOR PHASE I PROGRAM. VOLUME 2. FLIGHT TEST PLAN.
Final rept. 1 Jul 69-1 Jun 70.
Apr 73, 57p Rept no. D6-60178-2 FAA-RD-73-57-II-Vol-2
Contract DOT-FA69WA-2109
See also AD-783 583 and AD-783 584.

Descriptors: *Air traffic control systems, *Radio links, *Surveillance, *Multipath transmission, Voice communications, Satellites(Artificial), Aircraft, Digital systems, L band, Flight testing.
Identifiers: Tone ranging, ATS-5 satellite.

Flight test requirements was defined and integrated flight test schedules have been prepared for the voice/data communications, surveillance, and multipath propagation experiments defined in the phase I test plan. A 6-month flight test program is assumed. Aircraft flightpaths and maneuvers, measurement station locations, satellite usage, and test procedures are given for each experiment. From these, integrated test schedules for the KC-135, DC-6B, and ATS-5 satellite are prepared. Due to failure of the ATS-5 satellite to achieve proper stabilization in orbit, the flight test requirements and schedules described herein were extensively revised prior to the phase IV flight test program. (Author)

AD-783 751/1GA PC$3.25/MF$2.25
National Aviation Facilities Experimental Center Atlantic City N J
GRAPHIC STUDY OF A SELECTED SITE FOR A SECOND MAJOR AIRPORT IN THE ATLANTA, GEORGIA, TERMINAL AREA.
Final rept. Jun-Jul 74,
John Maurer, W. Robert McCosker, and Francis Willett. Aug 74, 32p Rept no. FAA-NA-74-33 FAA-RD-74-133

Descriptors: *Air traffic control terminal areas, Airports, Site selection, Georgia, Utilization, Air traffic, Urban areas.
Identifiers: Atlanta(Georgia), Traffic engineering.

A graphic simulation study of the Atlanta air traffic control terminal area was requested by the Southern Region to assist in developing a feasible plan for airspace use and air traffic control operations in the Atlanta metropolitan area, assuming the establishment of a second major airport. The second major airport was assumed to be located in the Paulding/Polk County area of Georgia, approximately 15 nautical miles west of Dobbins Air Force Base/Naval Air Station Atlanta, Marietta, Georgia. The study considered instrument operations to all instrument flight rule airports within the Atlanta terminal area. The primary runway configuration considered at the new airport was a northwest/southeast alignment of four parallel runways with two additional parallel north/south runways. The present major airport, William B. Hartsfield Atlanta International Airport, was considered to have four parallel east/west runways. Three other runway alignments for the new airport, a west/northwest and southwest were also studied. (Modified author abstract)

AD-783 804/8GA PC$3.75/MF$2.25
Aerospace Medical Research Lab Wright-Patterson AFB Ohio
TERCOM PERFORMANCE: ANALYSIS AND SIMULATION.
Final rept. 19 Oct 72-15 Nov 73,
Mark W. Cannon, Jr., and Joseph W. Carl. Jun 74, 71p Rept no. AMRL-TR-73-130

Descriptors: *Navigation, Terrain, Pattern recognition, Contours, Matching, Errors, Models, Computerized simulation, Computer programs.
Identifiers: TERCOM(Terrain Contour Matching Navigation Systems), Terrain contour matching navigation systems, TERCOM computer program.

A theoretical analysis of the performance of a nearest-prototype classifier (nearest in the sense of Euclidean distance) is presented as an approximate analysis of the performance of the Terrain Contour Matching Navigation System (TERCOM). The analysis is used to predict classifier performance on both artificially generated terrain with Gauss-Markov statistics and on real-world terrain. Over 150 simulation runs were performed over such terrain having added Gauss-Markov noise (independent of the terrain process)

with 6 different noise levels. Results of the simulation are presented, giving performance as a function of signal/noise ratio and as a function of terrain roughness. Measured miss-distances are also presented. The simulation also includes the performance of a nearest-prototype classifier based on mean absolute distance (the first Minkowski metric), which is the actual metric employed in TERCOM. (Modified author abstract)

AD-783 868/3GA PC$12.00/MF$2.25
Naval Postgraduate School Monterey Calif
DESIGN STUDY OF AN AVIONICS NAVIGATION MICROCOMPUTER.
Master's thesis,
William Lowell McCracken. Jun 74, 177p

Descriptors: *Navigation computers, *Microcomputers, Avionics, Computer programs, Navigation, Computer programming, Subroutines, FORTRAN, Theses.

A microcomputer program to solve the complex task of air-borne navigation was developed to demonstrate the practicality of replacing costly general purpose digital computers with relatively inexpensive dedicated microcomputers on-board naval aircraft. The microcomputer program showed that microcomputers have sufficient speed and accuracy to solve the navigation problem. In order to overcome the microcomputer's major deficiencies, speed and accuracy, special arithmetic subprograms based on table look-up were developed to trade inexpensive memory for more speed. An application of graph theory in the form of process graphs was made to facilitate the development and documentation of the navigation program. To aid in the testing of the microcomputer program a FORTRAN simulation program was developed to confirm the results of an error bound analysis of the navigation program. (Author)

AD-783 908/7GA PC$4.00/MF$2.25
Beukers Labs Inc Bohemia N Y
OMEGA SIGNAL PROCESSOR.
Final rept. 1 Feb 72-28 Feb 74,
Richard A. Bova. 28 Feb 74, 82p AFCRL-TR-74-0169
Contract F19628-72-C-0185

Descriptors: *Hyperbolic navigation, *Signal processing, Very low frequency, Radio receivers, Phase locked systems, Automatic, Digital systems, Integrated circuits, Logic circuits, Synchronization(Electronics).
Identifiers: Omega navigation system.

The goal of the program was to design and develop a digital fully automatic phase tracking Omega Processor using COS/MOS Integrated Circuits for low power consumption. The design approach is discussed and shown to be a multistate computer oriented process flow. The RF section and digital processor section are discussed in detail and an overall system specification is generated. Results of the testing of the RF and Digital sections are presented. A brief discussion of the Omega system of navigation is included to inform the reader of the existing system and plans to expand it into a global navigation system. (Author)

17I. Radar Detection

AD-783 748/7GA PC$3.25/MF$2.25
National Aviation Facilities Experimental Center Atlantic City N J
TEST AND EVALUATION OF PASSIVE HORN ANTENNA FOR THE AIRPORT SURVEILLANCE RADAR-5.
Final rept.,
Dominick L. Offi. Jul 74, 47p Rept no. FAA-NA-74-12 FAA-RD-74-113

Descriptors: *Radar antennas, *Horn antennas, Airport radar systems, Search radar, Passive systems, Radar clutter, Modification kits.
Identifiers: ASR-5 radar.

A passive horn modification kit was developed by the Raytheon Company for the National Aviation Facilities Experimental Center, Airport Surveillance Radar-5 test bed. The modified system was evaluated to determine the extent of performance improvements realized and to assess its applicability to all airport surveillance radars. System tests indicated the modification had no deleterious effect on the normal, low-beam coverage, and provided an improvement in signal-to-clutter ratio when small aircraft were competing with various forms of clutter. It was recommended that a passive horn modification providing dual-beam capability for all airport surveillance radars be considered for field implementation. (Author)

AD-783 761/0GA PC$7.75/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
POLARIZATION OF RADAR SIGNALS,
D. Kanareikin. 14 May 74, 92p Rept no. FSTC-HT-23-413-74
Unedited trans. of mono. Polyarizatsiya Radiolokatsionnykh Signalov, Moscow, 1966 p107-145,318-350.

Descriptors: *Radar signals, Polarization, Measurement, Polarimeters, Translations, USSR.
Identifiers: *Polarized electromagnetic radiation.

Methods of measuring the polarization parameters of electromagnetic waves are described and compared. Five methods are presented: polarization diagram method; compensation method; method of decomposing the wave into orthogonally polarized components; method of several antennas; and modulation method. Components and units of radars with polarization selection of signals are discussed.

AD-783 898/0GA PC$4.50/MF$2.25
Colorado Univ Boulder
ADAPTIVE ARRAY PROCESSING OF HF BACKSCATTER RADAR SIGNALS.
Semi-Annual rept. 1 Jan 73-28 Feb 74,
Lloyd J. Griffiths. May 74, 105p RADC-TR-74-194
Contract F30602-72-C-0386, ARPA Order-1423

Descriptors: *Radar antennas, *Antenna arrays, Adaptive systems, Signal processing, High frequency, Backscattering, Radar signals, Continuous wave radar.

The proposed adaptive array beamformer is to be considered as a component which will be added to an existing radar system with minimal change in the overall configuration. Measurements were taken under conditions representative of the environment in which an HF system must operate. Specifically, one-hop backscatter signals generated by an FM/CW transmitter format were received in the presence of relatively high noise and interference levels. Adaptive beamforming techniques are ideally suited to these conditions and can provide time variable null-tracking of both the frequency and spatial direction of arrival of interference sources.

AD-783 934/3GA PC$5.75/MF$2.25
Science Applications Inc Huntsville Ala
SPECIFICATION FOR ANALYSIS OF THE SPE (AN/UYK-17) IN A RADAR SIGNAL PROCESSING ENVIRONMENT.
Final rept.,
David E. Green, Ralph Kimball, and Curt C. Douglass. 16 Aug 74, 225p Rept no. SAI-75-542-HU
Contract N00014-74-C-0272

Descriptors: *Signal processing, *Data processing equipment, Radar signals, Air defense, Phased arrays, Radar, Specifications, Digital computers, Computer programs, FORTRAN.
Identifiers: AN/UYK-17.

A set of specifications were developed to be used as guidelines for analyzing the NRL Signal Processing Element (SPE, AN/UYK-17) in terms of radar signal processing tasks. The specifications are supplied in a generic form to address air defense scenarios, Multiple Function Array Radar (MFAR) modeling, and Data Processing System (DPS) sizing. SPE related guidelines are provided to specify signal processing experiments and demonstrations with respect to the XB-1 (V) testbed facility. (Author)

AD-916 029/2GA PC$8.25/MF$2.25
Sperry Rand Corp., Great Neck, N.Y. Sperry Gyroscope Div.
HAPDAR O AND M PROGRAM.
Final rept. 3 Jan-2 Oct 73.
Oct 73, 103p SGD-4263-0719
Contract DAHC60-69-C-0014
Distribution Limitation now Removed.

Descriptors: *Search radar, Operation, *Radar equipment, Maintenance, *Radar antijamming, Test methods, *Antimissile defense systems, Modification, Performance(Engineering), Electronic countermeasures, Radar range computers, Digital computers, Computer programs, Hypersonic vehicles, Hypersonic test vehicles, Aerial targets, Radar targets, Satellites(Artificial), Spheres, Launch vehicles, Interfaces.
Identifiers: *HAPDAR radar, IBM 360/65 computers, Athena, UNIVAC 1219 computers, Computer software.

The report describes the activities of the Sperry Gyroscope Division (SGD) in complying with the requirements of the contract as stated in scope of work SW-A-19-73, entitled 'Hapdar O and M,' dated 13 September 1972, issued by the Radar Division, U.S. Army Advanced Ballistic Missile Defense Agency, Huntsville, Alabama. In addition, it describes efforts in another contract area - namely, MOD P00009, which is the system upgrading contract. Scope of work SW-A-19-73 defines four primary tasks for the Hapdar O and M contract. (Modified author abstract)

PB-233 211/2GA PC$7.00/MF$2.25
Georgia Inst. of Tech., Atlanta. Engineering Experiment Station.
A STUDY TO DETERMINE THE FEASIBILITY OF USING REMOTE SENSING TECHNIQUES TO PREVENT SHIP COLLISIONS WITH SELECTED DRAW/LIFT BRIDGES.
Final rept.,
E. F. Greneker, T. M. Miller, and J. L. Eaves. Apr 74, 78p
Sponsored in part by Georgia Dept. of Transportation, Atlanta.

Descriptors: *Highway bridges, *Collision avoidance, *Remote sensing, *Radar detection, Bascule bridges, Lift bridges, Swing bridges, Water transportation, Display devices, Signal processing, Georgia.
Identifiers: Sidney Lanier Bridge.

The collision of an ocean going freighter with the Sidney Lanier Bridge in 1972, and subsequent collisions between ships and bridges spanning the State's navigable waterways led the Georgia Department of Transportation to fund this study to determine if an electronic sensor can be developed to warn of an impending collision between a ship and a bridge before impact. It was concluded that a radar warning system could be designed and built that would diminish the possibility of future collisions with the Sidney Lanier Bridge, Brunswick, Georgia. A radar sensor, computerized signal processor, ship's pilot display and bridgetender's display system for the purpose of collision avoidance is detailed in this report. (Modified author abstract)

SLA-74-30 PC$5.50/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
COMPARISON OF THE THEORETICAL ERRORS IN THE SIMULTANEOUS MEASUREMENT OF ROUND-TRIP DELAY AND DOP-

PLER FREQUENCY FOR SEVERAL RADAR WAVEFORMS. (VOLUME III OF A STUDY ENTITLED EXTENDED-RANGE ARTILLERY SPOTTING).
D. A. Jelinek. May 74, 50p
Contract AT(29-1)-789

Descriptors: (*Radar, *Accuracy), (*Projectiles, *Trajectories), Comparative evaluations, Doppler effect, Errors, Measuring methods, Modulation, Pulses, Velocity, Wave propagation.

For abstract, see NSA 30 04, number 12191.

17J. Seismic Detection

AD-783 605/9GA PC$3.25/MF$2.25
Texas Instruments Inc Dallas Equipment Group
EXTENDED ARRAY EVALUATION PROGRAM. SPECIAL REPORT NO. 11. EVALUATION OF THE NORWEGIAN SHORT-PERIOD ARRAY.
Final summary rept. 1 Apr 71-30 Sep 73,
Frode Ringdal, and Richard L. Whitelaw. 2 Nov 73, 95p Rept no. TI-ALEX(01)-STR-73-11
Contract F33657-72-C-0725, ARPA Order-1714
See also AD-768 617.

Descriptors: *Seismic detection, *Underground explosions, *Seismic arrays, Seismometers, Earthquakes, Nuclear explosions, Epicenters, Signal to noise ratio, Signal processing, Power spectra, Europe, Asia, Norway.
Identifiers: Norwegian seismic array, Vela Uniform, Short period seismometers.

The report describes the final phase of the evaluation of the Norwegian short-period Seismic Array (NORSAR) which has been conducted by Texas Instruments Incorporated at the Seismic Data Analysis Center. The report also summarizes results achieved during the complete evaluation study over the period 1 April 1971 to 30 September 1973. The major areas of study covered by this report are: Array processing performance; partial array performance; maximum likelihood estimation of the NORSAR event detection capability; and evaluation of short-period discriminants. The accumulated data base for this study has been 547 events, including 39 presumed explosions, 33 of which are from the Eurasian continent. (Author)

AD-783 606/7GA PC$4.00/MF$2.25
Texas Instruments Inc Dallas Equipment Group
EXTENDED ARRAY EVALUATION PROGRAM. SPECIAL REPORT NO. 13. EVALUATION OF THE DISCRIMINATION CAPABILITY OF THE NORWEGIAN SEISMIC ARRAY,
Frode Ringdal. 23 Nov 73, 80p Rept no. TI-ALEX(01)-STR-73-13
Contract F33657-72-C-0725, ARPA Order-1714
See also AD-783 605.

Descriptors: *Seismic detection, *Underground explosions, *Seismic arrays, Seismometers, Earthquakes, Nuclear explosions, Rayleigh waves, Power spectra, Identification, Europe, Asia, Norway.
Identifiers: Norwegian seismic array, Vela Uniform, Long period seismometers, Seismic discrimination, Short period seismometers.

The report presents results from an evaluation of the discrimination capability of the Norwegian Short and Long Period Array (NORSAR) for Eurasian events. The following types of discriminants have been analyzed and their performance has been compared: Rayleigh wave energy versus (m sub b)(M sub s)-(m sub b), AR/(m sub b)); Love wave energy versus (m sub b)((M sub s)-(m sub b), AL/(m sub b)); short period P-wave complexity versus (m sub b) (three discriminants); and short period P-wave spectral content versus (m sub b) (dominant period, spectral ratios). The total data base for this evaluation consists of 233 earthquakes from 1971-1972 and 24 presumed explosions from 1971, 1972, and 1973. (Modified author abstract)

AD-783 607/5GA PC$3.25/MF$2.25
Texas Instruments Inc Dallas Equipment Group
EXTENDED ARRAY EVALUATION PROGRAM. SPECIAL REPORT NO. 15. EVALUATION OF AN ADAPTIVE THREE-COMPONENT FILTER,
Stephen S. Lane. 30 Nov 73, 36p Rept no. TI-ALEX(01)-STR-73-15
Contract F33657-72-C-0725, ARPA Order-1714
See also AD-783 606.

Descriptors: *Seismic detection, *Underground explosions, *Signal processing, Band pass filters, Fourier transformation, Noise, Beam forming, Adaptive systems.
Identifiers: Vela Uniform, Adaptive filters.

The three-component adaptive filter takes advantage of the phase relations between radial, vertical, and tangential seismometer traces which hold when Rayleigh and Love waves are present. This study finds that adaptively processed data has up to 6 dB greater signal-to-noise ratio than simple bandpassed data. The detection threshold for single site data is lowered by an amount consistent with this gain, but the detection threshold for beam data is unchanged. An explanation for this difference, based on the character of single site and beam noise fields, is presented. Azimuthal discrimination and response of the filter to random noise are investigated. (Author)

AD-783 608/3GA PC$3.25/MF$2.25
Texas Instruments Inc Dallas Equipment Group
EXTENDED ARRAY EVALUATION PROGRAM. SPECIAL REPORT NO. 16. PRELIMINARY COMPARISON OF AUTOMATIC FISHER AND CONVENTIONAL POWER DETECTION ALGORITHMS,
Stephen S. Lane. 30 Nov 73, 40p Rept no. TI-ALEX(01)-STR-73-16
Contract F33657-72-C-0725, ARPA Order-1714
See also AD-783 607.

Descriptors: *Seismic detection, *Underground explosions, *Signal processing, Seismic arrays, Beam forming, Signal to noise ratio, Algorithms.
Identifiers: Vela Uniform, Alaskan long period array.

The performance of two seismic event detectors, the Fisher detector and the conventional power detector, was compared. Long-period records with low signal-to-noise ratios, recorded at the Alaskan Long Period Array, were used to establish performance characteristics, sensitivities, response to off-azimuth events, and response to signal distortion. Results confirmed the theoretical prediction that there is no important distinction between the detectors. (Author)

AD-783 646/3GA PC$3.00/MF$2.25
Texas Instruments Inc Dallas Equipment Group
VELA NETWORK EVALUATION AND AUTOMATIC PROCESSING RESEARCH.
Quarterly rept. no. 1, 1 Nov 73-31 Jan 74,
Terence W. Hartley. 15 Sep 74, 14p Rept no. TI-ALEX(01)-QR-74-01
Contract F08604-74-C-0033, ARPA Order-2551

Descriptors: *Seismic detection, *Underground explosions, Seismological stations, Seismic arrays, Networks, Seismometers, Earthquakes, Nuclear explosions, Signal processing, Norway, Alaska.
Identifiers: Vela Uniform, Norwegian seismic array, Alaskan long period array.

The first quarterly report summarizes progress under the VELA Network and Automatic Processing Research program during the period 1 November 1973 to 31 January 1974. Work in the following areas is summarized: VLPE station evaluation; network analysis, signal detection; signal estimation; and, first zone discrimination.

18. NUCLEAR SCIENCES AND TECHNOLOGY

18A. Fusion Devices (Thermonuclear)

BNL-18792 PC$4.00/MF$2.25
Brookhaven National Lab., Upton, N.Y.
DAMAGE ENERGY CROSS SECTION AND PRIMARY RECOIL SPECTRA FOR CTR-RELATED NEUTRON SOURCES.
D. M. Parkin, A. N. Goland, and H. C. Berry. 1973, 13p CONF-740402-37

Descriptors: (*Thermonuclear reactor walls, *Radiation effects), (*Niobium, *Physical radiation effects), (*Vanadium, Physical radiation effects), (*Titanium, Physical radiation effects), Aluminium, Carbon, Cross sections, Neutron reactions, Neutron sources, Spectra.

For abstract, see NSA 30 04, number 09359.

BNL-18815 PC$5.00/MF$2.25
Brookhaven National Lab., Upton, N.Y.
APPLICATIONS OF FUSION POWER TECHNOLOGY TO THE CHEMICAL INDUSTRY.
M. Beller, J. R. Powell, and M. Steinberg. 40p CONF-740609-2

Descriptors: (*Thermonuclear reactions, *Energy sources), Chemistry, Gamma radiation, Neutrons, Ultraviolet radiation.

For abstract, see NSA 30 04, number 09360.

BNWL-1823 PC$4.00/MF$2.25
Battelle Pacific Northwest Labs., Richland, Wash.
PACIFIC NORTHWEST LABORATORY ANNUAL REPORT FOR 1973 ON CONTROLLED THERMONUCLEAR REACTOR TECHNOLOGY.
Apr 74, 67p
Contract AT(45-1)-1830

Descriptors: (*Thermonuclear reactors, *Fission), (*Breeding blankets, *Graphite), Cost, Economics, Neutron reactions, Reactor materials, Research programs, Sputtering.

For abstract, see NSA 30 04, number 09361.

CONF-740402-22 PC$4.00/MF$2.25
Argonne National Lab., Ill.
SOME PRELIMINARY CONSIDERATIONS OF A MOLTEN-SALT EXTRACTION PROCESS TO REMOVE TRITIUM FROM LIQUID LITHIUM FUSION REACTOR BLANKETS.
V. A. Maroni, R. D. Wolson, and G. E. Staahl. Apr 74, 13p

Descriptors: (*Breeding blankets, Tritium), (*Tritium, *Separation processes), Lithium, Molten salts, Removal, Thermonuclear reactors.

For abstract, see NSA 30 04, number 09362.

IFA-FR-118-1974 PC$4.00/MF$2.25
Institutul de Fizica Atomica, Bucharest (Romania).
QUESTIONS ABOUT THE FEASIBILITY OF A THERMONUCLEAR REACTOR THE PLASMA OF WHICH IS CONTROLLED BY NUCLEAR FISSION.
G. Cristea. 1974, 18p
U.S. Sales Only.

Descriptors: (*Thermonuclear reactors, *Fission), Absorption, Boundary conditions, Collisions, Control systems, Debye length, Electromagnetic radiation, Resonance.

For abstract, see NSA 30 04, number 09363.

IPP-IV-66 PC$4.00/MF$2.25
Max-Planck-Institut fuer Plasmaphysik, Garching/Muenchen (F.R. Germany).
POSSIBILITY OF THE SIMULATION OF A SLOW-WAVE SYSTEM BY A PHASED ARRAY OF WAVEGUIDES.
M. Tutter, and S. Puri. Feb 74, 12p
U.S. Sales Only.

Descriptors: (*Waveguides, *Simulation), Coupling, Hybrid resonance, Microwave radiation, Plasma.

For abstract, see NSA 30 04, number 09368.

IPP-1-137 PC$4.00/MF$2.25
Max-Planck-Institut fuer Plasmaphysik, Garching/Muenchen (F.R. Germany).
SCALING OF A WALL-STABILIZED HIGH-BETA STELLARATOR.
F. Herrnegger, and M. Kaufmann. Jan 74, 15p
U.S. Sales Only.

Descriptors: (*Stellarators, *Scaling laws), Aspect ratio, High-beta plasma.

For abstract, see NSA 30 04, number 09365.

IPP-1-143 PC$4.25/MF$2.25
Max-Planck-Institut fuer Plasmaphysik, Garching/Muenchen (F.R. Germany).
NEUTRON FLUX DISTRIBUTION ON THE WALL OF TOROIDAL CONTROLLED THERMONUCLEAR REACTOR DEVICES WITH ELONGATED CROSS SECTION.
G. Becker, and R. Wunderlich. Feb 74, 22p
U.S. Sales Only.

Descriptors: (*Thermonuclear reactor walls, *Neutron spectra), Belt pinch, Elliptical configuration, Thermonuclear reactors, Toroidal configuration.

For abstract, see NSA 30 04, number 09366.

IPP-1-144 PC$4.00/MF$2.25
Max-Planck-Institut fuer Plasmaphysik, Garching/Muenchen (F.R. Germany).
AXIAL CONTRACTION IN TOROIDAL PINCHES WITH NON-CIRCULAR PLASMA CROSS-SECTIONS.
G. Becker. Mar 74, 16p
U.S. Sales Only.

Descriptors: (*Belt pinch, *Magnetic compression), Electric currents, Elliptical configuration, Surfaces, Toroidal configuration.

For abstract, see NSA 30 04, number 09367.

IPP-4-117 PC$4.00/MF$2.25
Max-Planck-Institut fuer Plasmaphysik, Garching/Muenchen (F.R. Germany).
MAGNETIC IRON-CORE MODEL AND STRAY FIELD MEASUREMENTS FOR PULSATOR I AND THEIR RELEVANCE TO JET.
J. Gernhardt, G. Herppich, and F. Werner. Feb 74, 12p IPP-III-11
U.S. Sales Only.

Descriptors: (*Pulsator stellarator, *Magnet coils), (*Magnet cores, *Simulators).

For abstract, see NSA 30 04, number 09369.

LA-UR-74-627 PC$4.75/MF$2.25
Los Alamos Scientific Lab., N.Mex.
UPDATE OF FIRST-WALL INSULATOR REQUIREMENTS FOR THE REFERENCE THETA-PINCH REACTOR (RTPR). (A SUMMARY REVIEW OF MATERIAL REPORTED SINCE APRIL 1973).
R. A. Krakowski, and F. W. Jr. Clinard. 1974, 33p CONF-740446-2
Contract W-7405-eng-36

Descriptors: (*Toroidal theta pinch devices, *Reactor materials), (*Thermonuclear reactor walls, *Aluminium oxides), Niobium.

For abstract, see NSA 30 04, number 09372.

LA-UR-74-628 PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
REVIEW OF SFX/FTR FIRST-WALL RESEARCH AND DEVELOPMENT PROGRAM AT LASL.
R. A. Krakowski, and K. I. Thomassen. 1974, 13p CONF-740446-1
Contract W-7405-eng-36

Descriptors: (*Thermonuclear reactor walls, *Research programs), (*Thermonuclear reactors, *Reactor materials), Lasl, Plasma heating, Tritium.

For abstract, see NSA 30 04, number 09373.

LA-5530-SR PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
PRESENT STATUS AND FUTURE PROGRAM OF THE ZT-1 EXPERIMENT.
J. A. Phillips, J. N. Di Marco, and F. C. Jahoda. Mar 74, 35p
Contract W-7405-eng-36

Descriptors: (*Toroidal screw pinch devices, *Research programs), Distribution, Electron temperature, Equilibrium plasma, Ion temperature, Lasl, Velocity.

For abstract, see NSA 30 04, number 09371.

NP-20001 PC$4.25/MF$2.25
AN SSSR, Moscow. Fizicheskij Inst.
PROPERTIES OF THE MAGNETIC FIELDS OF STELLERATORS WITH ELLIPTICAL COILS.
A. P. Popryadukhin. 1973, 22p
In Russian. U.S. Sales Only.

Descriptors: (*Stellarators, Magnet coils), (*Magnet coils, *Elliptical configuration), Magnetic fields.

For abstract, see NSA 30 04, number 09375.

NP-20011 PC$4.00/MF$2.25
Nauchno-Issledovatel'skij Inst. Ehlektrofizicheskoj Apparatury, Leningrad (USSR).
FOIL BREAKER FOR MEGAAMPERE CURRENT IN THE MICROSECOND RANGE.
L. V. Dubovoi, I. M. Roife, E. V. Seredenko, and B. A. Stekol'nikov. 1973, 8p
In Russian. U.S. Sales Only.

Descriptors: (*Switches, *Foils), (*Power supplies, Switches), Design, Electric currents, Thermonuclear devices.

For abstract, see NSA 30 04, number 09376.

UCID-15390 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
GENERATION AND RECOVERY OF TRITIUM IN THERMONUCLEAR REACTOR BLANKET USING HEAT PIPES.
R. W. Werner. 3 Oct 68, 15p
Contract W-7405-eng-48

Descriptors: (*Breeding blankets, Tritium), (*Tritium, *Recovery), Lithium 6, Lithium 7, Neutron reactions, Thermonuclear reactors.

For abstract, see NSA 30 05, number 12518.

UCID-16229 PC$4.25/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
SOME DIRECT CONVERSION POSSIBILITIES FOR ADVANCED CTR SYSTEMS.
L. Wood, and T. Weaver. 16 Mar 73, 22p
Contract W-7405-eng-48

Descriptors: (*Thermonuclear reactors, *Direct energy conversion), Charged particles, Mhd generators, Neutron reactions, X-ray spectra.

For abstract, see NSA 30 04, number 09377.

UCID-16230 PC$4.25/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
EXOTIC CTR FUELS FOR DIRECT CONVERSION-UTILIZING FUSION REACTORS.
T. Weaver, and L. Wood. 16 Mar 73, 22p
Contract W-7405-eng-48

Descriptors: (*Thermonuclear reactions, *Fuels), (*Thermonuclear reactors, Fuels), (*Boron 11, Thermonuclear reactions), (*Deuterium, Thermonuclear reactions), Helium 3, Proton beams.

For abstract, see NSA 30 04, number 09378.

UCID-16309 PC$4.50/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
FUSION MICROEXPLOSIONS, EXOTIC FUSION FUELS, DIRECT CONVERSION: ADVANCED TECHNOLOGY OPTIONS FOR CTR.
T. Weaver, J. Nuckolls, and L. Wood. 27 Apr 73, 30p
Contract W-7405-eng-48

Descriptors: (*Thermonuclear reactors, *Lasers), Direct energy conversion, Laser-produced plasma, Reviews, Thermonuclear reactions.

For abstract, see NSA 30 04, number 09379.

UCID-16474 PC$4.50/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
PARAMETER STUDY OF B/SUB Z/ LINER IMPLOSIONS FOR POSSIBLE CTR APPLICATIONS.
W. C. Condit. Jan 74, 28p
Contract W-7405-eng-48

Descriptors: (*Linear z pinch devices, *Implosions), Containment shells, Energy balance, Magnetic fields, Very high pressure.

For abstract, see NSA 30 04, number 09380.

UCRL-74054-2 PC$8.75/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
PROGRESS REPORT NO. 2 ON THE DESIGN CONSIDERATIONS FOR A LOW POWER EXPERIMENTAL MIRROR FUSION REACTOR.
R. W. Werner, G. A. Carlson, J. Hovingh, J. D. Lee, and M. A. Peterson. 8 Apr 74, 112p CONF-730971-1

Descriptors: (*Magnetic mirrors, *Design), Breeding blankets, Deuterium, Ion density, Neutral atom beam injection, Research programs, Thermonuclear reactors, Tritium.

For abstract, see NSA 30 04, number 09381.

UCRL-75293 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
SUMMARY OF A CONCEPTUAL DESIGN OF A MIRROR REACTOR FOR A FUSION ENGINEERING RESEARCH FACILITY (FERF).
C. E. Taylor. 12 Apr 74, 8p CONF-740402-38

Descriptors: (*Magnetic mirrors, *Design), Neutral atom beam injection, Niobium alloys, Recovery, Superconducting magnets, Titanium alloys, Tritium.

For abstract, see NSA 30 04, number 09382.

UCRL-75627 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
CALCULATIONS OF A FAST FISSION BLANKET FOR DT FUSION REACTORS WITH TWO EVALUATED DATA LIBRARIES.
R. C. Haight, and J. D. Lee. 11 Apr 74, 17p CONF-740452-1

Descriptors: (*Thermonuclear reactors, *Fission), (*Breeding blankets, Fission), Breeding, Deuterium, Neutron reactions, Plutonium 239, Tritium, Uranium 238.

For abstract, see NSA 30 04, number 09383.

18B. Isotopes

AAEC/E-306 PC$4.25/MF$2.25
Australian Atomic Energy Commission Research Establishment, Lucas Heights.
PRODUCTION OF YTTERBIUM-169 RADIOGRAPHY SOURCES IN A HIGH FLUX REACTOR.
E. L. R. Hetherington, and N. R. Wood. Feb 74, 25p
U.S. Sales Only.

Descriptors: (*Ytterbium 169, *Gamma sources), (*Gamma radiography, Gamma sources), Cross sections, Hifar reactor, Isotope production.

For abstract, see NSA 30 04, number 09673.

AAEC/E-321 PC$4.00/MF$2.25
Australian Atomic Energy Commission Research Establishment, Lucas Heights.
IMPROVED DISTILLATION SEPARATION FOR THE PRODUCTION OF FLUORINE-18 FROM REACTOR IRRADIATED LITHIUM CARBONATE.
J. Robson, and P. J. Sorby. May 74, 9p
U.S. Sales Only.

Descriptors: (*Fluorine 18, *Isotope production), Distillation, Lithium carbonates, Neutron reactions, Separation processes.

For abstract, see NSA 30 05, number 12414.

BARC-737 PC$17.00/MF$2.25
Bhabha Atomic Research Centre, Bombay (India).
PROGRESS REPORT OF THE ISOTOPE DIVISION FOR THE PERIOD ENDING DECEMBER 1973.
S. Jayaraman, and V. K. Iya. 1974, 278p
U.S. Sales Only.

Descriptors: (*India, *Isotope production), Economics, Hydrology, Industrial radiography, Irradiation, Labelled compounds, Medical supplies, Personnel, Radiation sources, Radioisotopes, Research programs, Sterilization, Tracer techniques, Uses.

For abstract, see NSA 30 04, number 09674.

CTC-60 PC$5.45/MF$2.25
Union Carbide Corp., Oak Ridge, Tenn. Computer Sciences Div.
GENERAL TRANSIENT PRODUCTIVITY PROGRAM.
J. H. Burris, and J. N. Tunstall. 14 Jun 74, 77p
Contract W-7405-eng-26

Descriptors: (*Gaseous diffusion process, *Mathematical models), Computer codes, Differential equations, Performance, Transients.

For abstract, see NSA 30 05, number 12834.

IEA-302 PC$4.00/MF$2.25
Instituto de Energia Atomica, Sao Paulo (Brazil).
RAPID PREPARATION OF FLUORINE-18 BY MEANS OF NUCLEAR RECOIL SEPARATION.
W. C. Parker, C. P. G. Da Silva, and W. H. G. Francis. Aug 73, 9p
U.S. Sales Only.

Descriptors: (*Fluorine 18, *Isotope production), Chemical reaction yield, Hot atom chemistry, Lithium carbonates, Recoils, Solvent extraction, Water.

For abstract, see NSA 30 04, number 09261.

IFA-RF-1-1974 PC$4.25/MF$2.25
Institutul de Fizica Atomica, Bucharest (Romania).
PRODUCTION OF /SUP 113M/IN. DEVELOPMENT OF METHODS FOR THE ANALYTICAL CONTROL OF THE CHEMICAL, RADIOCHEMICAL, AND RADIONUCLIDE PURITY.
I. Galateanu, I. Zamfir, and V. Lungu. 1974, 23p
In Rumanian. U.S. Sales Only.

Descriptors: (*Indium 113, *Isotope production), Impurities, Isomeric nuclei, Radiochemistry, Radiopharmaceuticals.

For abstract, see NSA 30 04, number 09262.

PATENT-3 778 295 Not available NTIS
Atomic Energy Commission, Washington, D.C.
CHEMICAL PLATING METHOD OF PREPARING RADIATION SOURCE MATERIAL.
Patent,
Paul K. Smith, Richard T. Huntoon, and Wilbur C. Mosley, Jr. Filed 8 Mar 72, patented 11 Dec 73, 4p
PAT-APPL-232 933
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Coating processes, *Radioactive isotopes, *Patents, Palladium, Californium isotopes.
Identifiers: PAT-CL-117-100-B, Californium 252.

The present invention relates to radiation source materials, particularly those including rare and expensive radioisotopes. For example, the spontaneous fission of californium-252 provides a substantial neutron flux but this element is extremely difficult and expensive to produce and fabricate. In respect to safety this isotope must be contained in a refractory and stable form to prevent its escape should the encapsulation fail during use or storage. In accordance with the present invention a dissociable radioisotope compound is suspended in a liquid solution and a layer of noble metal is chemically plated onto the suspended particles. The plating is achieved by the addition of noble metal cations and a chemical reductant. The particles are thereby enclosed in protective coatings of noble metal to minimize loss in the subsequent process. After the chemical plating step, the coated particles are filtered from the solution and dried to a powder.

RFP-2206 PC$4.00/MF$2.25
Dow Chemical U.S.A., Golden, Colo. Rocky Flats Div.
RECOVERY AND PURIFICATION OF AMERICIUM-241 FROM AN ALUMINUM--AMERICIUM OXIDE MIXTURE.
S. G. Proctor. 27 May 74, 5p
Contract AT(29-1)-1106

Descriptors: (*Americium 241, *Purification), Aluminium, Americium oxides, Precipitation, Recovery.

For abstract, see NSA 30 04, number 09263.

18C. Nuclear Explosions

AD-783 623/2GA PC$4.75/MF$2.25
Science Applications Inc Albuquerque N Mex
ELECTROMAGNETIC PULSE ENVIRONMENT STUDIES. VOLUME I. TWO-DIMENSIONAL GROUND-BURST ELECTROMAGNETIC PULSE CALCULATIONAL METHODS.
Final rept. 5 May 72-31 Dec 73,
Stephen J. Dalich, and Kenneth D. Granzow. Jun 74, 147p Rept no. SAI-73-514-AQ AFWL-TR-73-286-Vol-1
Contract F29601-72-C-0117

Descriptors: *Electromagnetic pulses, *Nuclear explosions, *Computer programming, Surface burst, Maxwells equations, Computations, Curve fitting, Graphics, Compilers.
Identifiers: SCX computer code, LEMP1 computer code.

A description of the physics and numerical methods used in two-dimensional ground burst electromagnetic pulse calculations is given. In particular the SCX code, one of two computer codes which performs such calculations, is described. The source terms, air chemistry, and boundary conditions are also discussed. Multipole expansion techniques for outer boundary conditions are described in detail. Comparisons between the SCX code and the LEMP1 code are presented. Instructions for running SCX are contained in Appendix III. (Author)

EERL-MP-E-74-2 PC$5.45/MF$2.25
Army Engineer Waterways Experiment Station, Livermore, Calif. Explosive Excavation Research Lab.
INVESTIGATION OF INTERMEDIATE- AND MAXIMUM-RANGE MISSILES PRODUCED BY CRATERING EXPERIMENTS.
J. F. III Dishon. Mar 74, 105p

Descriptors: (*Nuclear explosions, *Cratering explosions), (*Missiles, *Distribution), Production.

For abstract, see NSA 30 04, number 09458.

ORNL-4899 PC$5.45/MF$2.25
Oak Ridge National Lab., Tenn.
EFFECTS OF ELECTROMAGNETIC PULSE (EMP) ON THE SUPERVISORY CONTROL EQUIPMENT OF A POWER SYSTEM. FINAL REPORT.
J. K. Baird, and N. J. Frigo. Oct 73, 141p

Descriptors: (*Relays, *Physical radiation effects), (*Nuclear explosions, *Electromagnetic pulses), (*Power transmission, *Control systems), Atmospheric explosions.

For abstract, see NSA 30 04, number 09650.

ORNL-4960 PC$4.00/MF$2.25
Oak Ridge National Lab., Tenn.
TRANSIENT RESPONSE OF LOW FREQUENCY VERTICAL ANTENNAS TO HIGH ALTITUDE NUCLEAR ELECTROMAGNETIC PULSE (EMP).
P. R. Barnes, and D. B. Nelson. Jun 74, 43p

Descriptors: (*Antennas, *Physical radiation effects), (*Nuclear explosions, *Electromagnetic pulses), Atmospheric explosions.

For abstract, see NSA 30 04, number 09459.

SLL-74-232 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.; Sandia Labs., Livermore, Calif.
PLOWSHARE PROGRESS REPORT FOR QUARTER ENDING MARCH 31, 1974.
May 74, 5p
Contract AT(29-1)-789

Descriptors: (*Plowshare project, *Research programs), Control equipment, Detonators, Underground explosions.

For abstract, see NSA 30 05, number 12656.

TID-3522-R9-S2 PC$5.45/MF$2.25
USAEC Technical Information Center, Oak Ridge, Tenn.
SELECTED, ANNOTATED BIBLIOGRAPHY OF THE CIVIL, INDUSTRIAL, AND SCIENTIFIC USES FOR NUCLEAR EXPLOSIONS.
R. C. Kelly. Apr 74, 125p

Descriptors: (*Plowshare project, *Bibliographies), Nuclear explosions.

For abstract, see NSA 30 04, number 09463.

UCID-15653 PC$4.25/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
FIELD MEASUREMENTS OF FRACTURE PERMEABILITY IN GRANODIORITE.
E. T. McMullen, and A. D. Pasternak. 11 May 70, 25p

Descriptors: (*Nuclear explosions, *Cavities), (*Granodiorites, *Fractures), Gas flow, Permeability, Pressure measurement, Underground explosions.

For abstract, see NSA 30 04, number 09464.

UCID-15915 PC$7.25/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
BEARPAW SHALE: MATERIAL PROPERTIES DERIVED FROM EXPERIMENT AND ONE-DIMENSIONAL STUDIES.
B. K. Crowley, D. E. Burton, and J. B. Bryan. 27 Sep 71, 83p

Descriptors: (*Shales, *Physical properties), (*Chemical explosions, *Cratering explosions), (*Nuclear explosions, *Simulation), Chemical explosives, Computer calculations, Computer codes, Ground motion, Mathematical models, Mechanical effects, Montana, Underground explosions.

For abstract, see NSA 30 04, number 09465.

UCID-16078 PC$4.25/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
SPALL MEASUREMENTS PROGRAM FOR RIO BLANCO.
J. Toman, R. Terhune, and C. Sisemore. Jul 72, 23p
Contract W-7405-eng-48

Descriptors: (*Rio blanco event, *Fractures), (*Oil shales, Fractures), Deformation, Measuring instruments, Measuring methods, Mechanical effects.

For abstract, see NSA 30 05, number 12658.

UCID-16154 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
CHIMNEY PERMEABILITY BY ATMOSPHERIC PRESSURE CHANGE: INSTRUMENTS AND DATA HANDLING.
D. F. Snoeberger, C. J. Morris, and J. Baker. 21 Nov 72, 14p
Contract W-7405-eng-48

Descriptors: (*Nuclear explosions, Cavities), (*Cavities, *Pressure measurement), (*Alluvial deposits, *Permeability), (*Tuff, Permeability), Barometers, Data acquisition, Data processing, Earth atmosphere, Underground explosions.

For abstract, see NSA 30 04, number 09468.

18D. Nuclear Instrumentation

AD-783 717/2GA PC$4.00/MF$2.25
Stanford Research Inst Menlo Park Calif

DEVELOPMENT OF ELECTRIC: FIELD SENSORS.
Final rept. 1 Jun 72-15 Sep 73,
William C. Taylor, Arthur L. Whitson, and Duane C. Gates. 26 Feb 74, 77p DNA-3259F
Contract DNA001-72-C-0102

Descriptors: *Detectors, Electric fields, Electromagnetic pulses, Nuclear explosions, Measurement, Airburst.
Identifiers: Electric potential, Internal electromagnetic pulses.

The purpose of this program was to obtain parametric data and develop criteria needed in the design of wire-mesh-type electric-potential sensors for arbitrary Electromagnetic pulse (EMP) and Internal Electromagnetic Pulse (IEMP) environments. Tests were performed with various grid materials, thicknesses, and configurations in selected environments provided by the Febetron 706, Febetron 705, and Aurora flash gamma-ray machines, with varied environmental parameters such as air pressure and cavity material. It is shown that this technique can be used successfully when an essentially open-circuit voltage measurement is made, provided that care is taken to prevent large amounts of charge from being deposited on or scattered from the grid, which causes it to depart from the space-charge potential it is intended to measure. The various sources of these charges are described, and methods of minimizing the problem have been demonstrated. Furthermore, a method is illustrated that allows discrimination between the desired space-charge potential and the error-producing charge-deposition potential. (Modified author abstract)

AEEW-R-919 PC$4.50/MF$2.25
UKAEA Reactor Group, Winfrith. Atomic Energy Establishment.
INTERFERENCE IMMUNITY TESTS FOR NUCLEONIC INSTRUMENTATION.
E. P. Fowler. Apr 74, 27p
U.S. Sales Only.

Descriptors: (*Electronic equipment, *Performance testing), (*Measuring instruments, Performance testing), (*Reactor instrumentation, Performance testing), Interference, Recommendations.

For abstract, see NSA 30 05, number 12810.

ANL/HEP-7414 PC$6.50/MF$2.25
Argonne National Lab., Ill.; European Organization for Nuclear Research, Geneva (Switzerland).
PERFORMANCE OF THE ARGONNE 12-FOOT BUBBLE CHAMBER. TRACK SENSITIVE TARGET CONSTRUCTION AND OPERATING CONDITIONS.
K. Jaeger, and H. Leutz. Mar 74, 69p

Descriptors: (*Cryogenic bubble chambers, *Performance), Operation, Planning, Targets.

For abstract, see NSA 30 04, number 09625.

AREAEE-180 PC$4.00/MF$2.25
Atomic Energy Establishment, Cairo (Egypt).
ASSEMBLY AND CALIBRATION OF AN ANTICOMPTON GAMMA-RAY SPECTROMETER USING A GE(LI) DETECTOR AND AN ANNULAR NAI(TL) CRYSTAL.
A. A. El-Kady, E. A. Eissa, H. M. Abu-Zeid, N. B. Rofail, and D. Tolechenkov. 1973, 15p
U.S. Sales Only.

Descriptors: (*Compton spectrometers, *Calibration), Energy resolution, Li-drifted ge detectors, Performance, Solid scintillation detectors.

For abstract, see NSA 30 05, number 12765.

CERN-Trans-74-1 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR).

DYNAMICS OF A VAPOR BUBBLE IN HELIUM AND HYDROGEN ULTRASONIC CHAMBERS.
L. G. Tkachev, and V. D. Shestakov. Mar 74, 12p
Translation by N.M. Harigel and G. Harigel of JINR--P13-7206. U.S. Sales Only.

Descriptors: (*Cryogenic bubble chambers, *Ultrasonic waves), Bubble growth, Helium, Hydrogen, Particle tracks.

For abstract, see NSA 30 05, number 12788.

CERN-74-12 PC$5.25/MF$2.25
European Organization for Nuclear Research, Geneva (Switzerland).
GENERAL-PURPOSE AMPLIFIER AND READOUT SYSTEM FOR MULTIWIRE PROPORTIONAL CHAMBERS.
J. Lindsay, C. Millerin, J. C. Tarle, H. Verweij, and H. Wendler. 20 May 74, 45p
U.S. Sales Only.

Descriptors: (*Multiwire proportional chambers, *Readout systems), Amplifiers, Design, Electronic circuits, Performance, Preamplifiers.

For abstract, see NSA 30 04, number 09626.

COO-1105-204 PC$4.00/MF$2.25
Wisconsin Univ., Madison Medical Physics Labs.
DISCLOSURE TO USAEC COMPTON-EFFECT TAP/TAD DOSIMETER.
P. R. Moran. 2 Mar 74, 1p

Descriptors: Compton effect, Depolarization, Dosemeters, Electrical properties, Heating, Polarization.

For abstract, see NSA 30 04, number 09596.

COO-1105-205 PC$4.00/MF$2.25
Wisconsin Univ., Madison Medical Physics Labs.
THIN FILM "TRITIUM" DOSIMETRY.
P. R. Moran. 1 Mar 74, 1p

Descriptors: (*Tritium, *Radiation monitoring), Beta dosimetry, Dosemeters, Films, Personnel monitoring, Sensitivity, Thickness.

For abstract, see NSA 30 04, number 09597.

COO-1105-206 PC$4.00/MF$2.25
Wisconsin Univ., Madison Medical Physics Labs.
IMPROVING CHARACTERISTICS OF TL DOSIMETRY DEVICES BY SELECTIVE PURIFICATION OF STARTING MATERIALS.
P. R. Moran. 20 Mar 74, 8p

Descriptors: (*Thermoluminescent dosemeters, *Fabrication), Annealing, Doped materials, Purification, Sensitivity.

For abstract, see NSA 30 04, number 09598.

COO-2146-5 PC$4.00/MF$2.25
Case Western Reserve Univ., Cleveland, Ohio Dept. of Physics.
NUCLEON--NUCLEON POLARIZATION CORRELATION EXPERIMENTS IN THE 300 TO 800-MEV RANGE. TECHNICAL PROGRESS REPORT FOR A PROGRAM IN MEDIUM ENERGY NUCLEAR PHYSICS RESEARCH, 1 SEPTEMBER 1973--31 AUGUST 1974.
H. B. Willard. 24 May 74, 13p
Contract AT(11-1)-2146

Descriptors: (*Lampf linac, *Accelerator facilities), (*Proton-proton interactions, *Elastic scattering), Computers, Differential cross sections, Multiwire proportional chambers, Readout systems.

For abstract, see NSA 30 04, number 09628.

COO-2231-21 PC$7.00/MF$2.25
Kent State Univ., Ohio.
ENERGETIC-NEUTRON SPECTROMETRY. ANNUAL PROGRESS REPORT, 1 APRIL 1973--31 MARCH 1974.
R. Madey, F. M. Waterman, and A. Baldwin. 1974, 76p
Contract AT(11-1)-2231

Descriptors: (*Time-of-flight spectrometers, *Design), (*Neutron spectrometers, Design), Data acquisition systems, Energy resolution, Liquid scintillation detectors, Mev range, Performance, Plastic scintillation detectors, Proton recoil detectors, Research programs.

For abstract, see NSA 30 04, number 09616.

COO-323-31 PC$4.25/MF$2.25
Illinois Benedictine Coll., Lisle Physical Sciences Lab.
SPECIAL PROBLEMS IN NUCLEAR INSTRUMENTATION. PROGRESS REPORT, JUNE 1, 1973--MAY 31, 1974.
J. J. Spokas. 1974, 22p
Contract AT(11-1)-323

Descriptors: (*Ionization chambers, *Miniaturization), (*Tissue-equivalent materials, *Fabrication), Tissue-equivalent detectors, Carbon, Mixtures, Polypropylene.

For abstract, see NSA 30 04, number 09577.

EFI-43(73) PC$4.25/MF$2.25
Erevanskij Fizicheskij Inst. (USSR).
MONTE CARLO CALCULATION FOR X-RAY TRANSITION RADIATION DETECTOR BASED ON THE ENERGY DEPOSITION METHOD.
A. M. Zverev, K. A. Ispiryan, and A. T. Margaryan. 1973, 23p
In Russian. U.S. Sales Only.

Descriptors: Monte carlo method, Transition radiation detectors, X radiation.

For abstract, see NSA 30 05, number 12790.

EUR-5121-d
*REFER TO AL GAUDREAU/MF$2.25
Commission of the European Communities, Ispra (Italy). Joint Nuclear Research Center.
INTERFACE FOR THE CONTROL OF A MULTICHOPPER FACILITY.
J. Eder, and H. Brak. 1974, 37p
In German. U.S. Sales Only.

Descriptors: (*Neutron choppers, *Control systems), (*Time-of-flight spectrometers, Neutron choppers), (*Neutron spectrometers, Control systems), Computers, Equipment interfaces.

For abstract, see NSA 30 05, number 12766.

FRNC-CONF-93 PC$4.25/MF$2.25
Centre National de la Recherche Scientifique, 67 - Strasbourg (France). Lab. de Physique des Rayonnements et d'Electronique Nucleaire.
ULTRA-PURE GERMANIUM BASED NUCLEAR DETECTORS.
J. P. Ponpon, and P. Siffert. 7 May 73, 25p CONF-730557-5
In French. U.S. Sales Only.

Descriptors: (*Gamma spectrometers, Ge semiconductor detectors), (*Ge semiconductor detectors, *Fabrication), Performance, Specifications.

For abstract, see NSA 30 05, number 12767.

IFA-HE-83-1973 PC$4.00/MF$2.25
Institutul de Fizica Atomica, Bucharest (Romania).
IDENTIFICATION OF HEAVY IONS IN AGCL MONOCRYSTALS BY MEANS OF MULTIPLE COULOMB SCATTERING.
I. M. Cincheza, E. M. Friedlaender, and D. G. Haseganu. 1973, 14p
U.S. Sales Only.

Descriptors: (*Particle identification, Dielectric track detectors), (*Ion detection, Dielectric track detectors), (*Dielectric track detectors, *Performance), Coulomb scattering, Heavy ions, Monocrystals, Oxygen 16, Particle tracks, Silver chlorides.

For abstract, see NSA 30 04, number 09578.

IFA-RS-2-1973 PC$4.00/MF$2.25
Institutul de Fizica Atomica, Bucharest (Romania).
INPUT CIRCUIT FOR GAS DISCHARGE RADIATION DETECTORS.
M. Draghicescu, and V. Iliescu. 1973, 19p
In Rumanian. U.S. Sales Only.

Descriptors: (*Ionization chambers, *Counting circuits), (*Geiger-mueller counters, Counting circuits), Dead time, Halogens, Performance, Time resolution, Timing properties.

For abstract, see NSA 30 04, number 09579.

JINR-P13-7783 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Problems.
CHERENKOV SPECTROMETER WITH THE WATER RADIATOR.
V. I. Ganichev, V. V. Kruglov, A. V. Kulikov, A. V. Kuptsov, and L. L. Nemenov. 1974, 16p
In Russian. U.S. Sales Only.

Descriptors: (*Cherenkov counters, *Electron spectroscopy), Energy resolution, Mev range 10-100, Mev range 100-1000, Water.

For abstract, see NSA 30 04, number 09638.

JINR-P13-7791 PC$4.25/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Computing Techniques and Automation.
EFFECT OF THE HIGH-VOLTAGE PULSE PARAMETERS ON THE GEOMETRICAL AND BRIGHTNESS CHARACTERISTICS OF THE STREAMER IN A STREAMER CHAMBER.
N. S. Glagoleva, Yu. R. Lukstinsh, A. T. Matyushin, and V. T. Matyushin. 1974, 22p
In Russian. U.S. Sales Only.

Descriptors: Brightness, Geometry, High-voltage pulse generators, Operation, Streamer spark chambers.

For abstract, see NSA 30 04, number 09639.

JINR-P13-7811 PC$4.50/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Computing Techniques and Automation.
APPARATUS FOR CONTROLLING OPERATING CONDITIONS OF TWO-METER STREAMER CHAMBER.
V. D. Volodin, N. S. Glagoleva, P. S. Kuznetsov, A. T. Matyushin, and V. T. Matyushin. 1974, 26p
In Russian. U.S. Sales Only.

Descriptors: (*Streamer spark chambers, *Control systems), Accelerator facilities, Electric fields, High-voltage pulse generators, Jinr synchrotron, Operation.

For abstract, see NSA 30 04, number 09640.

JINR-P13-7867 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Problems.
SELFSIMILAR BEHAVIOR OF VAPOR BUBBLE IN BUBBLE CHAMBERS.
L. G. Tkachev, and V. D. Shestakov. 1974, 16p
In Russian. U.S. Sales Only.

Descriptors: (*Bubble chambers, *Bubble growth), Bubbles, Numerical solution, Ultrasonic waves.

For abstract, see NSA 30 04, number 09641.

JUL-1012-RX-RW PC$4.50/MF$2.25
Kernforschungsanlage Juelich G.m.b.H. (F.R. Germany).
INVESTIGATIONS ON THE DEVELOPMENT OF HIGH-TEMPERATURE ACTIVATION PROBES.
H. B. Greiss, and A. Naoumidis. Oct 73, 26p
In German. U.S. Sales Only.

Descriptors: (*Activation detectors, *Performance testing), (*Neutron fluence, Activation detectors), Aluminium oxides, Cobalt alloys, Corrosion, In core instruments, Niobium, Vanadium base alloys, Very high temperature.

For abstract, see NSA 30 04, number 09582.

KFK-1936 PC$4.25/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Experimentelle Kernphysik.
PROPERTIES OF A HADRON CALORIMETER USED AS A NEUTRON SPECTROMETER IN AN ISR-EXPERIMENT.
P. Hanke, W. Isenbeck, J. Moritz, K. H. Schmidt, and D. Wegener. Mar 74, 23p
U.S. Sales Only.

Descriptors: (*Shower counters, *Performance), (*Neutron spectrometers, Shower counters), Calibration, Efficiency, Energy dependence, Energy resolution, Gev range 01-10, Gev range 10-100, Solid scintillation detectors.

For abstract, see NSA 30 05, number 12791.

KFKI-74-19 PC$4.00/MF$2.25
Kozponti Fizikai Kutato Intezet, Budapest (Hungary).
SETTING UP AND APPLICATIONS OF THE NUCLEAR MEASURING EQUIPMENT "DETECTOR SIGNAL PROCESSOR".
A. Baranyai. 1974, 19p
U.S. Sales Only.

Descriptors: (*Radiation detectors, *Counting circuits), (*Bf3 counters, Counting circuits), (*He-3 counters, Counting circuits), (*Li-drifted ge detectors, Counting circuits), Amplifiers, Pulse discriminators, Pulse shapers.

For abstract, see NSA 30 05, number 12727.

LA-5572-MS PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
DESIGN AND DEVELOPMENT OF A COMBINATION IMPULSE TRANSDUCER.
V. S. Starkovich, E. L. Stephani, and E. V. Hawkins. Apr 74, 9p
Contract W-7405-eng-36

Descriptors: (*Transducers, *Nuclear explosion detection), Design, Nuclear explosions, Operation, Pulses, Underground explosions, X radiation.

For abstract, see NSA 30 04, number 09460.

LA-5609-MS PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
DATA ACQUISITION SOFTWARE FOR A MWPC SPECTROMETER.
J. C. Hiebert, and A. C. Niethammer. May 74, 25p
Contract W-7405-eng-36

Descriptors: (*Multiwire proportional chambers, *Data acquisition systems), (*Lampf linac, Data acquisition systems), Accelerator facilities, Data

processing, Magnetic spectrometers, Nucleon-nucleon interactions.

For abstract, see NSA 30 05, number 12792.

ORNL-TM-4614 PC$4.00/MF$2.25
Oak Ridge National Lab., Tenn.
CALCULATION OF THE RESPONSE OF SILICON DETECTORS OF FINITE RADIUS TO EXP - MESONS STOPPING IN TISSUE.
T. W. Armstrong, and K. C. Chandler. Jun 74, 11p
Contract W-7405-eng-26

Descriptors: (*Si semiconductor detectors, *Sensitivity), (*Pions minus, *Energy losses), (*Tissues, *Charged-particle transport), Capture.

For abstract, see NSA 30 04, number 09584.

UCRL-51393(Rev.1) PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
NEUTRON DOSIMETRY (14 MEV) FOR FOIL SAMPLES IRRADIATED WITH THE LAWRENCE LIVERMORE LABORATORY ROTATING TARGET NEUTRON SOURCE.
R. A. Van Konynenburg. 24 May 74, 16p
Contract W-7405-eng-48

Descriptors: (*Neutron dosimetry, *Activation detectors), Accuracy, Data processing, Fast neutrons, Foils, Niobium.

For abstract, see NSA 30 05, number 12751.

18E. Nuclear Power Plants

AD-783 757/8GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
ATOMS FOR PEACE--FOR MANKIND,
A. Petrosyants. 23 Apr 74, 7p Rept no. FSTC-HT-23-2030-72
Trans. from Pravda, Moscow (USSR) p3 col-2-8, 7 Sep 71.

Descriptors: *Nuclear power plants, *Nuclear energy, Translations, USSR, Nuclear reactors, Ionizing radiation, Electric power production, Uranium, Radioactive isotopes, Radioactive wastes, Transuranium elements.

Achievements of Soviet science and technology in the area of peaceful use of atomic power are discussed.

AD-783 796/6GA PC$6.00/MF$2.25
Army War Coll Carlisle Barracks Pa
THE ROLE OF NUCLEAR POWER IN ACHIEVING U. S. ENERGY SELF-SUFFICIENCY.
Individual research project,
Harvey L. Arnold, Jr. 28 May 74, 59p

Descriptors: *Energy management, *Nuclear energy, Nuclear power plants, United States, Electric power production, Thermonuclear energy, Breeder reactors, Fission, Energy gap, Nuclear reactors.
Identifiers: *Nuclear power.

The extent to which the nuclear power industry should be expected and encouraged to contribute to US energy self-sufficiency is investigated by quantifying the current and projected shortfall in domestic energy resource production and examining the potentials of the nuclear industry and all feasible alternatives in eliminating the shortfall. Current data establishing the shortfall through the end of this century are presented, as are summaries of the current status and expected future contributions of alternative solutions.

AEC-tr-7528 PC$3.50/MF$2.25
USAEC Technical Information Center, Oak Ridge, Tenn.
CHEMICAL CONDITIONING OF THE PRIMARY AND SECONDARY SYSTEMS OF PRESSURIZED WATER REACTORS.
R. Riess. 1972, 29p
Translation of pp 14-21 from the VGB Feedwater Conference, Essen, Germany, 1972.

Descriptors: (*Pwr type reactors, Primary coolant circuits), (*Primary coolant circuits, *Chemical composition), (*Secondary coolant circuits, Chemical composition), Water.

For abstract, see NSA 30 04, number 11817.

ANCR-1137 PC$7.25/MF$2.25
Idaho Nuclear Corp., Idaho Falls.
FACILITY OPERATING MANUAL: LOW POWER TEST FACILITY.
J. F. Kunze, and P. L. Chase. Dec 70, 85p
Contract AT(10-1)-1230

Descriptors: (*Lptf reactor, *Manuals), Documentation, Management, Nuclear materials management, Personnel, Radiation monitoring, Radiation protection, Reactor operation, Safety, Security.

For abstract, see NSA 30 04, number 11889.

ANL/EBR-83 PC$4.00/MF$2.25
Argonne National Lab., Ill.; Argonne National Lab., Idaho Falls, Idaho.
CONTROLS FOR EBR-II PRIMARY-TANK HEATERS.
D. H. Napper, and K. J. Moriarty. Mar 74, 20p
Contract W-31-109-eng-38

Descriptors: (*Ebr-2 reactor, *Heaters), Control systems, Electronic circuits, Semiconductor rectifiers.

For abstract, see NSA 30 04, number 11890.

ANL-8006 PC$4.00/MF$2.25
Argonne National Lab., Ill.
EFFECT OF RANDOM TEMPERATURE FLUCTUATIONS ON CREEP AND CREEP RUPTURE OF CYLINDRICAL TUBES.
W. N. Huang, and R. A. Valentin. Feb 74, 31p
Contract W-31-109-eng-38

Descriptors: (*Lmfbr type reactors, Tubes), (*Tubes, *Creep), Cylinders, Pipes, Reactor cooling systems, Reactor cores, Ruptures, Stainless steels, Stress analysis, Temperature dependence, Temperature gradients, Variations.

For abstract, see NSA 30 04, number 11848.

ANL-8094 PC$4.00/MF$2.25
Argonne National Lab., Ill.
ANALYSIS OF THE KELVIN--HELMHOLTZ INSTABILITY AT THE GAS-LIQUID INTERFACE OF LIQUID-SUBMERGED SUBSONIC AND SONIC GAS JETS RELATIVE TO FISSION-GAS JET IMPINGEMENT IN LMFBR SUBASSEMBLIES.
T. C. Chawla. Mar 74, 54p
Contract W-31-109-eng-38

Descriptors: (*Lmfbr type reactors, Fuel pins), (*Fuel pins, *Failures), Fission product release, Fuel element clusters, Gas flow, Gases, Heat transfer, Helmholtz instability, Interfaces, Jets, Liquids, Ruptures, Sodium, Sprays, Subsonic flow, Transonic flow, Two-phase flow, Viscosity.

For abstract, see NSA 30 04, number 11850.

BNL-18509 PC$7.25/MF$2.25
Brookhaven National Lab., Upton, N.Y.
HIGH FLUX BEAM REACTOR TECHNICAL SPECIFICATIONS.
Dec 73, 85p

Descriptors: (*Hfbr reactor, *Specifications), Containment systems, Design, Eccs, Inspection, Radiation monitoring, Reactivity, Reactor cooling systems, Reactor instrumentation, Reactor kinetics, Reactor safety, Remote handling, Scram.

For abstract, see NSA 30 05, number 14559.

BNWL-tr-117 PC$9.00/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany).
EXPERIMENTAL INVESTIGATIONS INTO COOLANT CROSS-MIXING AND PRESSURE DROP IN MULTI-ROD BUNDLES WITH HELICAL-TYPE SPACERS. INFLUENCE OF THE RESULTS ON THE DESIGN OF FUEL ELEMENTS FOR SODIUM-COOLED FAST BREEDER REACTORS.
H. Hoffmann. Dec 73, 116p
Translation of KFK--1843.

Descriptors: (*Lmfbr type reactors, Fuel element clusters), (*Fuel element clusters, *Cooling), Heat transfer, Hydrodynamics, Liquid flow, Mixing, Pressure gradients, Spacers.

For abstract, see NSA 30 04, number 11852.

CNAEM-R-114 PC$4.00/MF$2.25
Cekmece Nuclear Research Center, Istanbul (Turkey).
IRRADIATION FACILITIES IN AND AROUND THE TR-1 REACTOR CORE.
O. D. Oener. 1973, 16p
U.S. Sales Only.

Descriptors: (*Tr-1 reactor, *Beam holes), Configuration, Experimental channels, Rabbit tubes, Specifications.

For abstract, see NSA 30 04, number 11891.

CONF-740606-18 PC$4.00/MF$2.25
Oak Ridge National Lab., Tenn.
STRUCTURAL DESIGN CRITERIA FOR LMFBR COMPONENTS AND INELASTIC MATERIAL BEHAVIOR.
W. L. Greenstreet, K. C. Liu, and C. E. Pugh. 16p

Descriptors: (*Lmfbr type reactors, Reactor components), (*Reactor components, *Stress analysis), (*Stainless steel-304, *Mechanical properties), (*Stainless steel-316, Mechanical properties), Creep, Data, Deformation, Equations, Reactor materials, Reactor vessels, Specifications, Time dependence.

For abstract, see NSA 30 05, number 14537.

COO-3019-8 PC$5.50/MF$2.25
Harvard Univ., Boston, Mass. Harvard Air Cleaning Lab.
SEMIANNUAL PROGRESS REPORT, JANUARY 1--JUNE 30, 1973.
M. W. First, A. Goldin, R. R. Hall, D. W. Underhill, and D. W. Moeller. Dec 73, 50p
Contract AT(11-1)-3019

Descriptors: (*Fftf reactor, *Reactor cooling systems), Activated carbon, Aerosols, Argon, Blowers, Deposits, Ducts, Filters, Heat exchangers, Krypton, Performance, Sodium, Xenon.

For abstract, see NSA 30 04, number 11892.

DOCKET-50254-395 PC$7.25/MF$2.25
Commonwealth Edison Co., Chicago, Ill.
QUAD-CITIES STATION, UNITS 1 AND 2. FIRST YEAR OPERATING REPORT.
10 May 74, 85p DOCKET-50265-347

Descriptors: (*Quad cities-1 reactor, *Reactor operation), (*Quad cities-2 reactor, Reactor operation), Electric power, Reactor licensing, Reactor safety, Reactor start-up, Testing.

For abstract, see NSA 30 04, number 12048.

DUN-7971-B PC$4.00/MF$2.25
United Nuclear Industries, Inc., Richland, Wash.
PT-N-6, ISOTOPE PRODUCING RODS IN N REACTOR. FINAL REPORT.
D. L. Larkin. 9 Jul 73, 11p
Contract AT(45-1)-1857

Descriptors: (*N-reactor, *Isotope production), (*Tritium, Isotope production), Aluminium, Calibration, Control elements, Control rod worths, Data, Irradiation, Lithium, Nuclear poisons.

For abstract, see NSA 30 04, number 11830.

EIR-257 PC$4.75/MF$2.25
Eidgenoessisches Inst. fuer Reaktorforschung, Wuerenlingen (Switzerland).
POSSIBILITY OF CONTINUOUS IN-CORE GASEOUS EXTRACTION OF VOLATILE FISSION PRODUCTS IN A MOLTEN FUEL REACTOR.
M. Taube. May 74, 35p
U.S. Sales Only.

Descriptors: (*Molten salt fueled reactors, Fission products), (*Fission products, *Separation processes), Cesium 137, Computer calculations, Computer codes, Fission product release, G codes, Gases, Iodine 131, Mathematical models, Plutonium chlorides, Reprocessing, Uranium chlorides.

For abstract, see NSA 30 05, number 14519.

EUR-5055 PC$10.50/MF$2.25
Lahmeyer International G.m.b.H., Frankfurt am Main (F.R. Germany).
EXPERIENCES WITH INSPECTION, MAINTENANCE, REPAIR WORK AND DECONTAMINATION IN NUCLEAR POWER PLANTS WITH LIGHT WATER REACTORS.
1974, 149p
In German. U.S. Sales Only.

Descriptors: (*Bwr type reactors, *Reactor maintenance), (*Pwr type reactors, Reactor maintenance), Decontamination, Inspection, Radiation protection, Reactor components, Repair, Reviews.

For abstract, see NSA 30 04, number 11796.

EUR-5071 PC$6.00/MF$2.25
Commission of the European Communities, Ispra (Italy). Joint Nuclear Research Center.
CORRELATIONS BETWEEN HEAVY ISOTOPES IN IRRADIATED FUELS OF LIGHT WATER POWER REACTORS.
C. Foggi, and P. Frandoli. Mar 74, 60p
U.S. Sales Only.

Descriptors: (*Bwr type reactors, Nuclear fuels), (*Pwr type reactors, Nuclear fuels), (*Nuclear fuels, *Burnup), Buildup, Comparative evaluations, Computer calculations, Computer codes, Correlations, Isotope ratio, L codes, Plutonium isotopes, Uranium isotopes.

For abstract, see NSA 30 04, number 11797.

EURFNR-1134 PC$12.75/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany).
FAST BREEDER PROJECT. THIRD QUARTERLY REPORT, 1973.
R. Hueper. Dec 73, 193p EUR-4971

Descriptors: (*German federal republic, Lmfbr type reactors), (*Lmfbr type reactors, *Fuel rods), Reactor kinetics, Reactor materials, Reactor safety, Research programs.

For abstract, see NSA 30 04, number 11853.

EURFNR-1169 PC$6.75/MF$2.25
Stichting Reactor Centrum Nederland, Petten.
FAST REACTOR PROGRAMME. FOURTH QUARTER 1973 PROGRESS REPORT.
E. K. Hoekstra. Feb 74, 74p RCN-207
U.S. Sales Only.

Descriptors: (*Lmfbr type reactors, *Research programs), (*Reactor kinetics, *Neutron spectra), (*Fission products, *Reactivity worths), Aerodynamics, Aerosols, Failures, Fuel assemblies, Fuel cans, Fuel elements, Fuel rods, Gcfr type reactors, Heat transfer, Heaters, Hot spots, Hydraulics, Loss of flow, Mechanical properties, Physical radiation effects, Stainless steels, Stek reactor, Thermal expansion, Uranium carbides, Uranium nitrides, Vapor condensation.

For abstract, see NSA 30 04, number 11854.

FIND-50220 PC$4.00/MF$2.25
USAEC Technical Information Center, Oak Ridge, Tenn.
FIND: NINE MILE POINT NUCLEAR STATION, UNIT 1. ITEMS 1-232.
E. P. Carter. Apr 74, 24p

Descriptors: (*Nine mile point-1 reactor, *Reactor licensing), Indexes, Reactor safety.

For abstract, see NSA 30 04, number 12050.

FIND-50338 PC$4.00/MF$2.25
USAEC Technical Information Center, Oak Ridge, Tenn.
FIND: NORTH ANNA POWER STATION, UNITS 1 AND 2.
F. H. Horn. Jul 74, 29p

Descriptors: (*North anna-1 reactor, *Reactor licensing), (*North anna-2 reactor, Reactor licensing), Indexes, Reactor safety.

For abstract, see NSA 30 05, number 14679.

FIND-50344 PC$4.00/MF$2.25
USAEC Technical Information Center, Oak Ridge, Tenn.
FIND: TROJAN NUCLEAR PLANT, UNIT 1. ITEMS 1-100.
W. H. Williams. Jun 74, 23p

Descriptors: (*Trojan reactor, *Reactor licensing), Indexes, Reactor safety.

For abstract, see NSA 30 05, number 14680.

FIND-50443 PC$4.00/MF$2.25
USAEC Technical Information Center, Oak Ridge, Tenn.
FIND: SEABROOK STATION, UNITS 1 AND 2. ITEMS 1-36.
J. M. Asher. May 74, 32p

Descriptors: (*Seabrook-1 reactor, *Reactor licensing), (*Seabrook-2 reactor, Reactor licensing), Indexes, Reactor safety.

For abstract, see NSA 30 04, number 12051.

FIND-50448 PC$4.00/MF$2.25
USAEC Technical Information Center, Oak Ridge, Tenn.
FIND: DOUGLAS POINT NUCLEAR GENERATING STATION, UNITS 1 AND 2. ITEMS 1–40.
W. H. Williams. Jun 74, 30p

Descriptors: (*Douglas point-1 reactor, *Reactor licensing), (*Douglas point-2 reactor, Reactor licensing), Reactor safety.

For abstract, see NSA 30 04, number 12052.

FIND-50452 PC$4.00/MF$2.25
USAEC Technical Information Center, Oak Ridge, Tenn.
FIND: GREENWOOD ENERGY CENTER, UNITS 2 AND 3. ITEMS 1-33.
F. H. Horn. May 74, 34p

Descriptors: (*Greenwood-3 reactor, *Reactor licensing), (*Greenwood-2 reactor, Reactor licensing), Indexes, Reactor safety.

For abstract, see NSA 30 04, number 12053.

FRA-TM-62 PC$14.75/MF$2.25
Argonne National Lab., Ill.
USER'S MANUAL FOR THE REACTOR BURNUP SYSTEM, REBUS-2.
A. P. Olson. 1 Mar 74, 231p

Descriptors: (*Computer codes, *R codes), (*Fuel elements, *Burnup), (*Lmfbr type reactors, Fuel cycle), (*Fuel cycle, *Computer calculations), Fuel management, Multigroup theory, Neutron transport theory, One-dimensional calculations, One-group theory, Two-dimensional calculations.

For abstract, see NSA 30 04, number 11855.

GA-A-12795 PC$4.00/MF$2.25
General Atomic Co., San Diego, Calif.
INDEPENDENT REVIEW OF THE PHYSICS DESIGN OF THE RELOAD 1 FUEL SEGMENT OF THE PSC CORE.
C. Apperson, and W. Davison. Mar 74, 38p
Contract AT(04-3)-633

Descriptors: (*Vrain reactor, *Reactor fueling), Comparative evaluations, Computer calculations, Criticality, Cross sections, Design, Fuel cycle, Fuel element clusters, Mathematical models, Multiplication factors, Reactor kinetics.

For abstract, see NSA 30 05, number 14520.

GA-A-12910 PC$4.00/MF$2.25
General Atomic Co., San Diego, Calif.
THERMAL CONDUCTIVITY OF LARGE HTGR FUEL RODS.
W. R. Johnson. 15 Mar 74, 46p
Contract AT(04-3)-167

Descriptors: (*Htgr type reactors, Fuel rods), (*Fuel rods, *Thermal conductivity), (*Uranium carbides, Thermal conductivity), (*Thorium oxides, Thermal conductivity), Coated fuel particles, Isotope ratio, Physical radiation effects, Testing.

For abstract, see NSA 30 04, number 11832.

GA-A-12920 PC$5.45/MF$2.25
General Atomic Co., San Diego, Calif.
PREIRRADIATION REPORT: HRB-4 AND HRB-5 IRRADIATION CAPSULES.
W. R. Johnson. 15 Mar 74, 56p
Contract AT(04-3)-167

Descriptors: (*Htgr type reactors, Coated fuel particles), (*Fuel rods, *Physical radiation effects), (*Coated fuel particles, Physical radiation effects), (*Uranium carbides, Physical radiation effects), Fast neutrons, Performance testing, Thorium oxides.

For abstract, see NSA 30 04, number 11833.

GA-9261 PC$10.50/MF$2.25
Gulf General Atomic Co., San Diego, Calif.
PUBLIC SERVICE COMPANY OF COLORADO 330-MW(E) HIGH-TEMPERATURE GAS-COOLED REACTOR RESEARCH AND DEVELOPMENT PROGRAM. QUARTERLY PROGRESS REPORT FOR THE PERIOD ENDING MARCH 31, 1969.
29 Apr 69, 150p
Contract AT(04-3)-633

Descriptors: (*Vrain reactor, *Fuel elements), Coated fuel particles, Control rod drives, Performance testing, Reactor components, Reactor kinetics, Research programs, Steam generators, Testing.

For abstract, see NSA 30 04, number 11831.

HWS-10006 PC$11.50/MF$2.25
Atlantic Richfield Hanford Co., Richland, Wash.
HANFORD STANDARD: DESIGN CRITERIA.
1974, 169p

Descriptors: (*Hapo, Mechanical structures), (*Mechanical structures, *Standards), Air conditioning, Alarm systems, Communications, Corrosion protection, Fires, Noise, Pipelines, Power transmission, Railways, Ventilation, Water.

For abstract, see NSA 30 04, number 09421.

JAPFNR-128 PC$3.75/MF$2.25
Sanwa Tekki Corp., Utsunomiya (Japan). Utsunomiya Works.
PERFORMANCE TEST OF MECHANICAL SNUBBER FOR FAST BREEDER REACTOR.
A. Sasaki, K. Sunakoda, and T. Uchi. Mar 73, 35p
PNC-J-231-73-1
U.S. Sales Only.

Descriptors: (*Lmfbr type reactors, Primary coolant circuits), (*Primary coolant circuits, Shock absorbers), (*Shock absorbers, *Performance testing), Engineering, Equations, Mathematical models.

For abstract, see NSA 30 05, number 14541.

JAPFNR-142 PC$5.50/MF$2.25
Japan Atomic Energy Research Inst., Tokai, Ibaraki. Tokai Research Establishment.
STUDY ON THE BEHAVIOR OF FISSION PRODUCTS IN SODIUM(1). FIRST, SECOND, THIRD, AND FOURTH SODIUM CIRCULATION EXPERIMENTS.
Y. Yamazaki, K. Hirano, and T. Sukegawa. May 73, 46p PNC-J-250-73-20
U.S. Sales Only.

Descriptors: (*Lmfbr type reactors, Primary coolant circuits), (*Primary coolant circuits, Fission products), (*Fission products, *Spatial distribution), Deposits, Sodium.

For abstract, see NSA 30 05, number 14542.

JAPFNR-151 PC$4.00/MF$2.25
Power Reactor and Nuclear Fuel Development Corp., Tokyo (Japan).
PROGRESS REPORT ON FAST BREEDER REACTOR DEVELOPMENT IN JAPAN.
Feb 74, 8p PNC-N-251-74-6
U.S. Sales Only.

Descriptors: (*Lmfbr type reactors, *Research programs), (*Joyo reactor, *Construction), (*Monju reactor, *Design), Reactor components, Reactor control systems, Reactor instrumentation, Reactor materials.

For abstract, see NSA 30 04, number 11869.

JUL-1014-RE PC$5.25/MF$2.25
Kernforschungsanlage Juelich G.m.b.H. (F.R. Germany). Zentralabteilung Forschungsreaktoren.
EXTENSION OF THE FOUR STANDPIPES IN THE TANK OF THE RESEARCH REACTOR FRJ-2 AS AN EXAMPLE OF THE PERFORMANCE OF COMPLICATED TASKS IN AREAS WITH HIGH RADIATION LEVELS.
M. Nickel, J. Schmitz, and J. Wolters. Nov 73, 43p
In German. U.S. Sales Only.

Descriptors: (*Frj-2 reactor, *Eccs), Aluminium, Arc welding, Manipulators, Materials testing, Pipes, Remote handling, Remote handling equipment, Repair, Tanks, Tools.

For abstract, see NSA 30 04, number 11895.

JUL-1017-RG PC$7.50/MF$2.25
Kernforschungsanlage Juelich G.m.b.H. (F.R. Germany). Inst. fuer Reaktorentwicklung.
TECHNOLOGICAL AND COMMERCIAL POSSIBILITIES WHICH RESULT BY USING A HIGH-TEMPERATURE REACTOR FOR THE FUTURE SUPPLY OF MINERAL OIL IN THE FRG.
H. G. Eickhoff. Nov 73, 88p
In German. U.S. Sales Only.

Descriptors: Economics, Htgr type reactors, Petroleum, Planning, Process heat reactors, Synthetic fuels.

For abstract, see NSA 30 04, number 11834.

JUL-983-RE PC$8.00/MF$2.25
Kernforschungsanlage Juelich G.m.b.H. (F.R. Germany). Zentralabteilung Forschungsreaktoren.
PRESENT AND FUTURE UTILIZATION OF THE RESEARCH REACTORS FRJ-1 (MERLIN) AND FRJ-2 (DIDO) OF THE KERNFORSCHUNGSANLAGE, JUELICH.
J. Fassbender, E. Muench, D. Nutbohm, and G. Thamm. Jul 73, 98p
In German. U.S. Sales Only.

Descriptors: Cost, Economics, Frj-1 reactor, Frj-2 reactor, Kernforschungsanlage juelich, Planning, Reactor operation.

For abstract, see NSA 30 04, number 11894.

KFK-1894 PC$5.75/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Reaktorentwicklung.
INVESTIGATION OF THE INFLUENCE OF SPACERS ON THE FLOW-INDUCED VIBRATIONS OF FUEL PLATES OF THE GRENOBLE HIGH FLUX REACTOR.
A. De Grande, and J. Kadlec. Dec 73, 52p
In German. U.S. Sales Only.

Descriptors: (*Grenoble reactor, *Fuel plates), Fluid flow, Fuel assemblies, Mechanical vibrations, Mockup, Spacers.

For abstract, see NSA 30 05, number 14563.

KURRI-TR-110 PC$7.25/MF$2.25
Kyoto Univ., Kumatori, Osaka (Japan). Research Reactor Inst.
HIGH FLUX RESEARCH REACTOR AND ITS UTILIZATION.
1972, 81p
In Japanese. U.S. Sales Only.

Descriptors: (*Research reactors, *Uses), Leading abstract, Reactor experimental facilities.

For abstract, see NSA 30 04, number 11897.

LA-5571-MS PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
ANTIMONY--BERYLLIUM NEUTRON SOURCE FOR THE LASL WATER BOILER REACTOR.
A. M. Gage. Apr 74, 20p
Contract W-7405-eng-36

Descriptors: (*Supo reactor, Neutron sources), (*Neutron sources, *Design), Antimony, Beryllium, Calibration, Data, Mathematical models.

For abstract, see NSA 30 04, number 11907.

NP-20025 PC$12.25/MF$2.25
UKAEA London Office.
REACTORS: UK FIFTH EDITION.
Aug 72, 181p
U.S. Sales Only.

Descriptors: (*United kingdom, *Reactors), (*Research reactors, United kingdom), (*Lmfbr type reactors, United kingdom), Agr type reactors, Dragon reactor, Htgr type reactors, Magnox type reactors, Nuclear power plants, Planning, Sghwr reactor, Ukaea.

For abstract, see NSA 30 04, number 11837.

ORNL-TM-4515 PC$5.75/MF$2.25
Oak Ridge National Lab., Tenn.
ESTIMATED QUANTITIES OF MATERIALS CONTAINED IN A 1000-MW(E) PWR POWER PLANT.
R. H. Bryan, and I. T. Dudley. Jun 74, 51p
Contract W-7405-eng-26

Descriptors: (*Pwr type reactors, *Building materials), (*Nuclear power plants, Building materials), Composite materials, Construction, Fabrication, Planning.

For abstract, see NSA 30 05, number 14510.

ORNL-TM-4570 PC$4.50/MF$2.25
Oak Ridge National Lab., Tenn.
ANALYSIS OF NEUTRON-DENSITY OSCILLATIONS RESULTING FROM CORE BARREL MOTION IN THE PALISADES NUCLEAR POWER PLANT.
D. N. Fry, R. C. Kryter, and J. C. Robinson. May 74, 29p
Contract W-7405-eng-26

Descriptors: (*Palisades-1 reactor, *Reactor cores), Data, Neutron flux, Oscillations, Pwr type reactors, Reactor noise.

For abstract, see NSA 30 04, number 11820.

ORNL-tr-2790 PC$4.75/MF$2.25
CEA, 75 - Paris (France); Electricite de France, 75 - Paris.
COMPUTATIONAL METHODS FOR GRAPHITE GAS COOLED REACTORS SHIELDING: COMPARISON WITH SHIELDING MEASUREMENTS MADE DURING START-UP TESTS.
J. Brisbois, J. Duco, F. Bourdeau, and J. Chapus. 31p
Translation by M. Gerrard of CEA-CONF--2213.

Descriptors: (*Gcr type reactors, *Shielding), Comparative evaluations, Computer calculations, Computer codes, D codes, M codes, Mathematical models, P codes, S codes, T codes, Z codes.

For abstract, see NSA 30 04, number 11839.

RCN-206 PC$4.75/MF$2.25
Stichting Reactor Centrum Nederland, Petten.
TEMPERATURE AND HEAT FLUX DISTRIBUTION IN SODIUM COOLED FBR TYPE FUEL PINS WITH ECCENTRICALLY PLACED PELLETS.
H. D. de Jong, and V. Vonka. Nov 73, 31p
U.S. Sales Only.

Descriptors: (*Lmfbr type reactors, Fuel pins), (*Fuel pins, *Heat transfer), (*Snr reactor, Fuel pins), Asymmetry, Finite difference method, Fuel pellets, Mathematical models, Simulation, Sodium, Spatial distribution, Stainless steel-304, Temperature distribution.

For abstract, see NSA 30 05, number 14547.

RCN-209 PC$5.75/MF$2.25
Stichting Reactor Centrum Nederland, Petten.
COUPLED FAST-THERMAL CRITICAL FACILITY STEK.
H. T. Klippel, and J. Smit. Feb 74, 54p
U.S. Sales Only.

Descriptors: (*Stek reactor, *Design), Comparative evaluations, Coupled reactor cores, Fission products, Lifetime, Multiplication factors, Neutrons, Reactivity worths, Reactor components, Reactor safety, Reactor start-up, Specifications, Zero power reactors.

For abstract, see NSA 30 04, number 11909.

RD/B/N-2857 PC$4.00/MF$2.25
Central Electricity Generating Board, Berkeley (UK). Berkeley Nuclear Labs.
VARIATION OF STANTON NUMBER WITH PRANDTL NUMBER FOR ROUGH AND SMOOTH SURFACES AT GAS-COOLED REACTOR CONDITIONS.
H. G. Lyall, and M. A. M. Pirie. Feb 74, 14p
RPC/HT/N-(73)29
U.S. Sales Only.

Descriptors: (*Gas cooled reactors, Heat transfer), (*Heat transfer, *Surface properties), Coolant loops, Correlations, Prandtl number, Reactor cooling systems, Reynolds number, Roughness, Tubes.

For abstract, see NSA 30 05, number 14523.

RD/B/N-2905 PC$4.00/MF$2.25
Central Electricity Generating Board, Berkeley (UK). Berkeley Nuclear Labs.
SHAKEDOWN OF STRUCTURES AT HIGH TEMPERATURE.
C. H. A. Townley. Feb 74, 14p CFR/DCWG-(74)46
U.S. Sales Only.

Descriptors: (*Reactor components, Stress analysis), (*Stress analysis, *Time dependence), (*Stainless steel-316, Stress analysis), Creep, Design, Strains, Stress relaxation, Transients.

For abstract, see NSA 30 04, number 11872.

SwRI-2154-P-11-23 PC$13.75/MF$2.25
Southwest Research Inst., San Antonio, Tex.
REPLACEMENT OF SELECTED COMPONENTS IN THE LACBWR PRIMARY COOLANT PIPING SYSTEM.
P. J. Herbert, and H. C. Burghard. 31 Aug 73, 213p
Contract AT(11-1)-2154

Descriptors: (*Lacbwr reactor, Primary coolant circuits), (*Primary coolant circuits, *Stress corrosion), Pipes, Repair, Stainless steels.

For abstract, see NSA 30 04, number 11801.

SLA-73-959 PC$4.75/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
SANDIA PULSED REACTOR III (SPR III): INITIAL TESTS AND OPERATIONS.
L. L. Bonzon. Jun 74, 33p
Contract AT(29-1)-789

Descriptors: (*Spr-3 reactor, *Reactor operation), Planning, Testing.

For abstract, see NSA 30 04, number 11910.

WASH-1139-74 PC$7.00/MF$2.25
USAEC Office of Planning and Analysis, Washington, D.C.
NUCLEAR POWER GROWTH, 1974--2000.
Feb 74, 78p

Descriptors: (*Nuclear power, *Planning), Breeding, Fabrication, Fuel cycle, Nuclear power plants, Plutonium, Reprocessing, Uranium.

For abstract, see NSA 30 05, number 14676.

WASH-1230(Vol.5) PC$19.50/MF$2.25
United Engineers and Constructors, Inc., Philadelphia, Pa.
HIGH TEMPERATURE GAS-COOLED REACTOR PLANT. VOLUME V. 770-MWE CENTRAL STATION POWER PLANTS INVESTMENT COST STUDY.
Dec 73, 328p
Contract AT(11-1)-2226

Descriptors: (*Htgr type reactors, *Cost), Comparative evaluations, Design, Economics, Investment, Nuclear power plants, Standards.

For abstract, see NSA 30 05, number 14524.

18F. Radiation Shielding and Protection

BNL-18886 PC$4.00/MF$2.25
Brookhaven National Lab., Upton, N.Y.
UNCHANGING ASPECTS OF RADIATION EXPOSURE LIMITS.
C. B. Meinhold. 1974, 17p CONF-740529-1, SM-184/19

Descriptors: (*Radiation protection, *Safety standards), (*Man, *Maximum permissible exposure), External irradiation, Icrp, Internal irradiation, International organizations, National organizations, United kingdom, Us ncrp, Usa.

For abstract, see NSA 30 04, number 11698.

LA-UR-74-600 PC$4.50/MF$2.25
Los Alamos Scientific Lab., N.Mex.; USAEC, Washington, D.C.
APPLICATION OF SHIELDING BENCHMARK EXPERIMENTS TO THE TESTING OF NUCLEAR DATA, CALCULATIONAL METHODS, AND PROCEDURES.
R. J. LaBauve, D. R. Harris, D. W. Muir, and P. B. Hemmig. 1974, 26p CONF-740440-1
Contract W-7405-eng-36

Descriptors: (*Shielding, *Data compilation), Computer codes, Data processing, E codes, Gamma radiation, Research programs.

For abstract, see NSA 30 04, number 11706.

MLM-2145 PC$5.45/MF$2.25
Mound Lab., Miamisburg, Ohio.
SAFETY ANALYSIS REPORT FOR PACKAGING (SARP): ATMX-500 RAILCAR NUCLEAR PACKAGING.
J. F. Griffin, J. B. Peterson, D. A. Edling, and L. F. Rodriguez. 31 May 74, 72p
Contract AT(33-1)-Gen-53

Descriptors: (*Radioactive wastes, *Criticality), (*Containers, *Safety), Design, Packaging, Railways, Shielding, Thermal insulation, Transport.

For abstract, see NSA 30 05, number 13308.

ORNL-TM-1312(Vol.13) PC$4.50/MF$2.25
Oak Ridge National Lab., Tenn.
STRUCTURAL ANALYSIS OF SHIPPING CASKS. VOLUME 13. CEIR: A FORTRAN PROGRAM FOR ESTIMATION OF THE RESPONSE OF CYLINDRICAL LEAD-SHIELDED CASKS TO END IMPACTS.
J. H. Evans. Jun 74, 26p
Contract W-7405-eng-26

Descriptors: (*Casks, *Impact tests), (*Radioactive materials, *Transport), (*Computer codes, *C codes), Safety.

For abstract, see NSA 30 04, number 10502.

ORNL-tr-1658 PC$13.00/MF$2.25
Commission of the European Communities, Brussels (Belgium); Gesellschaft fuer Kernenergieverwertung in Schiffbau und Schiffahrt m.b.H., Hamburg (F.R. Germany).
SHIELDING EXPERIMENTS IN THE GEESTHACHT RESEARCH REACTOR. ANNUAL REPORT, 1965.
E. Bagge, and E. Fischer. 197p
Translation of EUR--2960.

Descriptors: (*Frg-1 reactor, Shielding), (*Shielding, *Research programs), Gamma spectra, German federal republic, Measuring instruments, Neutron spectra, Shielding materials.

For abstract, see NSA 30 04, number 11707.

PEM-35 PC$4.50/MF$2.25
Raytheon Co., Bedford, Mass. Missile Systems Div.
NUCLEAR EMP: EMP HARDENING APPROACH FOR SAM-D.
G. L. Warner, and A. C. Doskocil. 1973, 26p
CONF-730935-6

Descriptors: (*Missiles, *Physical radiation effects), (*Nuclear explosions, *Electromagnetic pulses), Atmospheric explosions, Hardening.

For abstract, see NSA 30 04, number 09461.

RLO-SA-74-1 PC$4.00/MF$2.25
USAEC Richland Operations Office, Wash.
SAFE--SECURE TRANSPORTATION, WHO IS RESPONSIBLE.
R. F. Garrison. 1974, 8p CONF-740901-1

Descriptors: (*Radioactive materials, *Transport), Criticality, Legal aspects, Packaging, Quality control, Radiation hazards, Reliability, Safety.

For abstract, see NSA 30 05, number 13309.

TID-26589 PC$6.75/MF$2.25
Battelle Columbus Labs., Ohio.
SAFETY ANALYSIS REPORT FOR THE SHIPMENT OF FFTF FUEL IN THE F-144-1 SHIPPING CONTAINER.
20 May 74, 74p

Descriptors: (*Fuel element clusters, *Transport), (*Casks, *Safety), Fftf reactor, Lmfbr type reactors, Transport regulations.

For abstract, see NSA 30 05, number 13310.

Y-DD-152 PC$4.00/MF$2.25
Oak Ridge Y-12 Plant, Tenn.
SAFETY ANALYSIS REPORT FOR PACKAGING (OAK RIDGE Y-12 PLANT MODEL DT-2 PACKAGE FOR ENRICHED URANIUM).
H. R. Dyer, and W. T. Mee. 20 Jun 74, 25p
Contract W-7405-eng-26

Descriptors: (*Enriched uranium, *Transport), (*Casks, *Safety), Accidents, Criticality, Mechanical tests, Quality control, Thermal insulation, Thermal testing, Uranium 235.

For abstract, see NSA 30 04, number 10503.

18G. Radioactive Wastes and Fission Products

ARH-2816 PC$5.50/MF$2.25
Atlantic Richfield Hanford Co., Richland, Wash.
SPECTROPHOTOMETRIC DETERMINATION OF NITRATE WITH 4,4'-DIAMINODIPHENYLSULFONE.
W. I. Winters. Feb 74, 46p
Contract AT(45-1)-2130

Descriptors: (*Nitrates, *Spectrophotometry), (*Radioactive wastes, *Chemical analysis), Aromatics, Interfering elements, Organic nitrogen compounds, Organic sulfur compounds, Radioactive waste processing, Radioactive waste storage, Reprocessing, Sensitivity, Sulfuric acid.

For abstract, see NSA 30 04, number 09251.

BNWL-B-141 PC$18.50/MF$2.25
Battelle Pacific Northwest Labs., Richland, Wash.
DATA FOR PRELIMINARY DEMONSTRATION PHASE OF THE "ENVIRONMENTAL QUALITY INFORMATION AND PLANNING SYSTEMS (EQUIPS)".
Dec 71, 307p
Contract AT(45-1)-1830

Descriptors: (*Nuclear power plants, *Radioactive wastes), (*Radioactive waste disposal, *Radiation hazards), (*Environment, *Contamination), Fuel cycle, Liquid wastes, Production, Radiation protection, Radioactive waste storage, Radionuclide migration, Salt deposits, Solid wastes, Underground disposal.

For abstract, see NSA 30 05, number 13299.

BNWL-B-223 PC$6.50/MF$2.25
Battelle Pacific Northwest Labs., Richland, Wash.
ADVANCED WASTE MANAGEMENT STUDIES. PROGRESS REPORT, APRIL--MAY 1972.
A. M. Platt. 1972, 67p
Contract AT(45-1)-1830

Descriptors: (*Radioactive waste disposal, *Polar regions), (*Radioactive waste storage, *Research programs), (*Radioactive wastes, *Waste storage), Geologic deposits, Ice, Salt deposits, Shales, Space, Transmutation, Underground disposal.

For abstract, see NSA 30 04, number 10493.

BNWL-B-223-10 PC$5.45/MF$2.25
Battelle Pacific Northwest Labs., Richland, Wash.
ADVANCED WASTE MANAGEMENT STUDIES. PROGRESS REPORT, JANUARY--MARCH 1974.
K. J. Schneider. May 74, 80p
Contract AT(45-1)-1830

Descriptors: (*Radioactive waste disposal, *Research programs), (*Radioactive waste processing, Research programs), (*Radioisotopes, *Transmutation), Cost, Geologic deposits, Glaciers, Radiation hazards, Radioactive wastes, Safety, Seas, Underground disposal.

For abstract, see NSA 30 05, number 13300.

BNWL-tr-114 PC$4.50/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany).
IODINE FILTER PROGRAM.
J. Wilhelm, H. G. Dillmann, K. Gerlach, and H. Schuttelkopf. 9 May 74, 26p
Translation of excerpt from KFK--1565.

Descriptors: (*Iodine, *Adsorption), (*Iodine isotopes, *Radiation monitoring), Air filters, Nuclear power plants, Research programs.

For abstract, see NSA 30 04, number 09254.

BNWL-1825 PC$4.00/MF$2.25
Battelle Pacific Northwest Labs., Richland, Wash.
STUDIES ON MANAGEMENT OF SELECTED WASTES. QUARTERLY PROGRESS REPORT, JANUARY--MARCH 1974.
K. J. Schneider. Apr 74, 54p
Contract AT(45-1)-1830

Descriptors: (*Radioactive waste processing, *Research programs), (*Tritium, Radioactive waste processing), Decontamination, Fuel cans, Gaseous wastes, Inconel alloys, Pyrolysis, Residues, Solid wastes, Solidification, Spent fuel elements, Stainless steels, Zircaloy.

For abstract, see NSA 30 05, number 12406.

BNWL-1900(Vol.1) PC$10.60/MF$2.25
Battelle Pacific Northwest Labs., Richland, Wash.
HIGH-LEVEL RADIOACTIVE WASTE MANAGEMENT ALTERNATIVES. SECTION 1. SUMMARY. SECTION 2. BACKGROUND AND DATA BASE. SECTION 3. EVALUATION METHODOLOGY.
K. J. Schneider, and A. M. Platt. May 74, 458p
Contract AT(45-1)-1830

Descriptors: (*Radioactive waste disposal, *Space), (*Nuclear power plants, *Radioactive wastes), (*Fuel reprocessing plants, Radioactive wastes), Contamination, Cost, Economics, Ecosystems, Environment, Geologic deposits, Glaciers, Human populations, Ice, Radiation hazards, Radionuclide migration, Research programs, Safety, Seas, Sociology, Underground disposal.

For abstract, see NSA 30 05, number 13295.

BNWL-1900(Vol.2) PC$7.60/MF$2.25
Battelle Pacific Northwest Labs., Richland, Wash.
HIGH-LEVEL RADIOACTIVE WASTE MANAGEMENT ALTERNATIVES. SECTION 4. GEOLOGIC DISPOSAL.
K. J. Schneider, and A. M. Platt. May 74, 259p
Contract AT(45-1)-1830

Descriptors: (*Fuel reprocessing plants, *Radioactive wastes), (*Radioactive waste disposal, *Geologic deposits), Contamination, Cost, Earthquakes, Environment, Geology, Human populations, Hydrology, Liquid wastes, Radiation hazards, Research programs, Rocks, Safety, Sociology, Solid wastes, Stratigraphy, Underground disposal, Usa.

For abstract, see NSA 30 05, number 13296.

BNWL-1900(Vol.3) PC$7.60/MF$2.25
Battelle Pacific Northwest Labs., Richland, Wash.
HIGH-LEVEL RADIOACTIVE WASTE MANAGEMENT ALTERNATIVES. SECTION 5. ICE SHEET DISPOSAL. SECTION 6. SEABED DISPOSAL.
K. J. Schneider, and A. M. Platt. May 74, 310p
Contract AT(45-1)-1830

Descriptors: (*Fuel reprocessing plants, *Radioactive wastes), (*Radioactive waste disposal, *Glaciers), Antarctica, Cost, Environment, Greenland, Ice, Research programs, Sociology, Solid wastes, Waste transportation.

For abstract, see NSA 30 05, number 13297.

BNWL-1900(Vol.4) PC$10.60/MF$2.25
Battelle Pacific Northwest Labs., Richland, Wash.
HIGH-LEVEL RADIOACTIVE WASTE MANAGEMENT ALTERNATIVES. SECTION 7. WASTE PARTITIONING. SECTION 8. EXTRATERRESTRIAL DISPOSAL. SECTION 9. TRANSMUTATION PROCESSING.
K. J. Schneider, and A. M. Platt. May 74, 463p
Contract AT(45-1)-1830

Descriptors: (*Fuel reprocessing plants, *Radioactive wastes), (*Radioactive waste processing, *Separation processes), (*Radioactive waste disposal, *Space), (*Radioisotopes, *Transmutation), Accelerators, Containers, Cost, Design, Environment, Fission, Nuclear explosives, Research programs, Safety, Space vehicles, Thermonuclear reactors, Waste transportation.

For abstract, see NSA 30 05, number 13298.

CEA-R-4463 PC$8.00/MF$2.25
CEA Centre d'Etudes Nucleaires de Saclay, 91 - Gif-sur-Yvette (France).
DETERMINATION OF STRONTIUM AND ITS IMPURITIES IN SOLUTIONS FROM A PILOT PURIFICATION PLANT.
C. Kertesz. May 74, 100p
In French. U.S. Sales Only.

Descriptors: (*Strontium, *Radiochemical analysis), (*Silver, *Emission spectroscopy), (*Alkaline earth metals, Emission spectroscopy), Cea saclay, Fission products, Impurities, Liquid wastes, Purification, Quantitative chemical analysis, Radioactive waste processing, Strontium 90, Yttrium 90, Ammonium compounds, Chromatography, Precipitation.

For abstract, see NSA 30 04, number 09255.

DUN-2349 PC$6.25/MF$2.25
United Nuclear Industries, Inc., Richland, Wash.
BEN FRANKLIN DAM STUDY. FINAL REPORT, I.
J. W. Ballowe. 17 Apr 67, 61p
Contract AT(45-1)-1857

Descriptors: (*Reactors, *Thermal effluents), (*Hapo, Radioactive waste disposal), (*Radioactive waste disposal, *Underground disposal), (*Washington, *Water reservoirs), Buildings, Damage, Dams, Ground water, Hazards, Levels, Safety, Thermal pollution.

For abstract, see NSA 30 04, number 09565.

HW-81710 PC$4.00/MF$2.25
General Electric Co., Richland, Wash. Hanford Atomic Products Operation.
TEST COLUMN FOR RECOVERY OF PLUTONIUM FROM CAC-880 WASTE STREAM.
D. M. Creighton. 7 Apr 64, 15p
Contract AT(45-1)-1350

Descriptors: (*Plutonium, *Solvent extraction), Carbon tetrachloride, Phosphonic acid esters, Radioactive waste processing, Sodium carbonates.

For abstract, see NSA 30 05, number 12408.

IEA-300 PC$5.00/MF$2.25
Instituto de Energia Atomica, Sao Paulo (Brazil).
STUDIES FOR THE OCEAN DISPOSAL SYSTEM FOR SEWAGE IN SANTOS AND SAO VICENTE. PART 1.
A. G. Occhipinti, W. Sanchez, and S. Gaglianone. Aug 73, 39p
In Portuguese. U.S. Sales Only.

Descriptors: (*Liquid wastes, *Marine disposal), Brazil.

For abstract, see NSA 30 04, number 10494.

IEA-301 PC$5.25/MF$2.25
Instituto de Energia Atomica, Sao Paulo (Brazil).
STUDIES FOR THE OCEAN DISPOSAL SYSTEM FOR SEWAGE IN SANTOS AND SAO VICENTE--OCEAN MIXING. PART 2.
W. Sanchez, E. Garcia Agudo, J. Leomax dos Santos, C. Szulak, and A. G. Occhipinti. Aug 73, 43p
In Portuguese. U.S. Sales Only.

Descriptors: (*Radioactive waste disposal, *Marine disposal), (*Radionuclide migration, *Seawater), Radioisotopes, Tracer techniques.

For abstract, see NSA 30 04, number 10495.

JPRS-62361 PC$3.25/MF$2.25
Joint Publications Research Service, Arlington, Va.
RADIOACTIVE WASTE, DECONTAMINATION, LOSSES OF URANIUM AND PLUTONIUM,
F. V. Rauzen, N. E. Artemova, and G. N. Novoselov. 1 Jul 74, 26p
Trans. of Atomnaya Energiya (USSR) n1 p27-37, 69-70 Jan 74.

Descriptors: *Radioactive wastes, *Pollution, Radiation decontamination, Ion exchangers, Nuclear fuel elements, Plutonium, Uranium, Steels, Translations, USSR.

The report contains discussions of the use of sorption pulsation columns for decontaminating liquid radioactive wastes, methods of calculation and prediction of radioactive contamination of the ground layer of the atmosphere by discharges from pipes of atomic power plants, and losses of uranium and plutonium with steel during thermal opening of fuel elements.

KY-657 PC$4.00/MF$2.25
Paducah Gaseous Diffusion Plant, Ky.
URANIUM HEXAFLUORIDE TAILS STORAGE CYLINDERS.
M. L. Glenn. 17 Jun 74, 10p
Contract W-7405-eng-26

Descriptors: (*Uranium hexafluoride, *Waste storage), (*Depleted uranium, Waste storage), Containers, Corrosion, Cylinders, Thickness.

For abstract, see NSA 30 05, number 13301.

ORNL-TM-4467 PC$8.00/MF$2.25
Oak Ridge National Lab., Tenn.
SHALE FRACTURING INJECTIONS AT OAK RIDGE NATIONAL LABORATORY: 1972 SERIES.
H. O. Weeren. Jun 74, 98p
Contract W-7405-eng-26

Descriptors: (*Radioactive waste disposal, *Underground disposal), (*Ornl, Radioactive waste disposal), Geologic deposits, Liquid wastes, Shales.

For abstract, see NSA 30 04, number 10496.

ORNL-tr-2811 PC$4.25/MF$2.25
Oak Ridge National Lab., Tenn.
METHOD FOR CHOOSING SAFE DISPOSAL CONDITIONS FOR SOLIDIFIED WASTES DEPENDING ON PROPERTIES AND SPECIFIC ACTIVITY.
1973, 25p
Translated by Martha Gerrard from the Russian.

Descriptors: (*Radioactive waste disposal, *Safety), Containers, Contamination, Environment, Geologic deposits, Heat transfer, Hydrology, Leaks, Radioactive wastes, Solid wastes, Underground disposal.

For abstract, see NSA 30 05, number 13302.

PAT-APPL-443 262 PC$4.00/MF$2.25
Atomic Energy Commission, Washington, D.C. Assistant General Counsel for Patents.
NOBLE GAS ADSORPTION PROCESS.
Patent Application,
Jess W. Thomas. Filed 19 Feb 74, 19p
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Radioactive isotopes, *Gas filters, *Patent applications, Radon, Charcoal.
Identifiers: PAT-CL-55-26.

It is known that one of the principal internal radiation hazards in the mining of uranium is the presence of radon due to its immediate degradation products. However, although radon daughters are the principal inhalation hazard, rather than the radon itself, removal of the daughters alone is unsatisfactory since unacceptable concentration levels of the daughters are rapidly produced from relatively small amounts of radon. The present invention uses a method of employing carbon to remove a noble gas such as krypton, xenon or radon from air when present in relatively small amounts. This method includes in the removal of the noble gas such as radon from air the steps of passing a finite volume of the air through a charcoal filter to absorb the radon, then passing a substantially reduced volume if air through said filter after heating the latter to a temperature sufficient to release the radon so that latter is carried away in the reduced volume of air, followed by cooling and passing the reduced volume of air containing the radon through a second charcoal filter to absorb all the radon present.

SGAE-2252 PC$4.25/MF$2.25
Oesterreichische Studiengesellschaft fuer Atomenergie G.m.b.H., Seibersdorf. Inst. fuer Strahlenschutz.
REMOVAL OF THE EXCESS NITRIC ACID IN RADIOACTIVE WASTE SOLUTIONS AND SOLIDIFICATION OF THE RESIDUE AS ALKYD RESIN.
H. Richter, and H. Sorantin. Mar 74, 24p
In German. U.S. Sales Only.

Descriptors: (*Radioactive waste processing, *Solidification), Anhydrides, Denitration, Glycerol, Liquid wastes, Nitric acid, Phthalic acid.

For abstract, see NSA 30 04, number 09256.

SGAE-2253 PC$4.00/MF$2.25
Oesterreichische Studiengesellschaft fuer Atomenergie G.m.b.H., Seibersdorf. Inst. fuer Isotopenanwendung.
INACTIVE TRACER TECHNIQUE FOR DETERMINATION OF THE EFFICIENCY OF AN EVAPORATOR PLANT FOR RADIOACTIVE WASTE WATER.
I. Huber, and F. Benischek. Mar 74, 15p
In German. U.S. Sales Only.

Descriptors: (*Radioactive waste processing, *Evaporation), (*Evaporators, *Performance testing), Tracer techniques.

For abstract, see NSA 30 04, number 09677.

WASH-1315 PC$4.50/MF$2.25
USAEC Directorate of Licensing, Washington, D.C.
IMPROVED CONTROL OF RADIOACTIVE WASTE AT HANFORD.
F. E. Stubblefield, and E. B. Jackson. Jun 74, 30p

Descriptors: (*Hapo, Radioactive waste management), (*Radioactive waste management, *Gaseous wastes), Liquid wastes, Radioactive wastes, Radioactivity, Solid wastes, Stack disposal, Underground disposal.

For abstract, see NSA 30 05, number 13289.

18I. Reactor Engineering and Operation

AECL-4767 PC$5.00/MF$2.25
Atomic Energy of Canada Ltd., Chalk River, Ontario.
CANADIAN NUCLEAR POWER PROGRAM. A BRIEF TO THE SCIENCE COUNCIL OF CANADA.
Apr 74, 38p
U.S. Sales Only.

Descriptors: (*Nuclear industry, Canada), (*Candu reactor, *Comparative evaluations), (*Canada, Power reactors), (*Power reactors, *Planning), Economics, Fuel cycle, Market.

For abstract, see NSA 30 04, number 12033.

AEEW-R-905 PC$4.00/MF$2.25
UKAEA Reactor Group, Winfrith. Atomic Energy Establishment.
SABRE CODE FOR PREDICTION OF COOLANT FLOWS AND TEMPERATURES IN PIN BUNDLES CONTAINING BLOCKAGES.
A. D. Gosman, R. Herbert, S. V. Patankar, R. Potter, and D. B. Spalding. Oct 73, 18p CONF-731020-2
U.S. Sales Only.

Descriptors: (*Lmfbr type reactors, Fuel element clusters), (*Fuel element clusters, *Flow blockage), Boiling, Computer codes, Fuel channels, Liquid flow, Reactor cooling systems, S codes, Sodium, Temperature gradients.

For abstract, see NSA 30 05, number 14582.

ANCR-1148 PC$5.45/MF$2.25
Aerojet Nuclear Co., Idaho Falls, Idaho.
EXPERIMENT DATA REPORT FOR 1-1/2-LOOP SEMISCALE SYSTEM ISOTHERMAL TESTS 1001, 1002, AND 1003.
R. S. Alder, E. M. Feldman, D. J. Olson, and P. A. Pinson. May 74, 110p
Contract AT(10-1)-1375

Descriptors: (*Pwr type reactors, Loss of coolant), (*Loss of coolant, *Simulation), (*Blowdown, Simulation), (*Eccs, *Mockup), Data, Fluid flow, Functional models, Heat transfer, Pressure dependence, Temperature dependence, Testing.

For abstract, see NSA 30 05, number 14583.

ANCR-1149 PC$14.25/MF$2.25
Aerojet Nuclear Co., Idaho Falls, Idaho.
EXPERIMENT DATA REPORT FOR SEMISCALE ISOTHERMAL TEST PROGRAM HOT-WALL TESTS.
E. M. Feldman, and P. A. Pinson. May 74, 225p
Contract AT(10-1)-1375

Descriptors: (*Eccs, *Testing), (*Pwr type reactors, Eccs), Blowdown, Fluid flow, Heating, Loss of coolant, Mockup, Pressure dependence, Pressure vessels, Simulation, Time dependence.

For abstract, see NSA 30 04, number 11931.

ANCR-1150 PC$5.45/MF$2.25
Aerojet Nuclear Co., Idaho Falls, Idaho.
EXPERIMENT DATA REPORT FOR SINGLE- AND TWO-PHASE STEADY STATE TESTS OF THE 1-1/2-LOOP MOD-1 SEMISCALE SYSTEM PUMP.
D. J. Olson. May 74, 75p
Contract AT(10-1)-1375

Descriptors: (*Pwr type reactors, Reactor cooling systems), (*Reactor cooling systems, Pumps), (*Pumps, *Performance testing), Cavitation, Eccs, Loss of coolant, Pressure gradients, Tables, Two-phase flow.

For abstract, see NSA 30 04, number 11932.

BNL-18921 PC$4.00/MF$2.25
Brookhaven National Lab., Upton, N.Y.
AXIAL POWER PEAKING FACTORS FOR POINT BEACH 2.
G. S. Lellouche. May 74, 14p

Descriptors: (*Point beach-2 reactor, *Transients), Comparative evaluations, Computer calculations, Computer codes, Loss of coolant, N codes, P codes, Peaks, Power density, Reactor control systems, Reactor kinetics.

For abstract, see NSA 30 05, number 14584.

CEA-Bib-211 PC$4.25/MF$2.25
CEA Centre d'Etudes Nucleaires de Saclay, 91 - Gif-sur-Yvette (France).
ELECTRONIC EQUIPMENT FOR CONTROL AND MONITORING OF NUCLEAR REACTORS.
May 74, 25p CONF-740333-1
In French. U.S. Sales Only.

Descriptors: (*Reactor control systems, *Bibliographies), (*Reactor instrumentation, *Meetings), Electronic equipment, Monitoring.

For abstract, see NSA 30 05, number 14643.

CONF-740401-13 PC$4.50/MF$2.25
Oak Ridge National Lab., Tenn.
EFFECT OF PARTIAL BLOCKAGES IN SIMULATED LMFBR FUEL ASSEMBLIES.
M. H. Fontana, P. A. Gnadt, T. S. Kress, R. E. MacPherson, and L. F. Parsly. 1974, 29p
Contract W-7405-eng-26

Descriptors: (*Lmfbr type reactors, Fuel assemblies), (*Fuel assemblies, *Mockup), (*Loss of flow, *Simulation), Comparative evaluations, Computer calculations, Computer codes, Data, H codes, Mathematical models, O codes, Temperature gradients.

For abstract, see NSA 30 04, number 11936.

CONF-740520-1 PC$4.00/MF$2.25
Oak Ridge National Lab., Tenn.
SOCIAL EFFECTS OF NUCLEAR POWER PLANTS.
E. Peelle. 1974, 9p

Descriptors: (*Nuclear power plants, *Environment), Cost benefit analysis, Economics, Human populations, Sociology.

For abstract, see NSA 30 04, number 11937.

CONF-740523-2 PC$4.00/MF$2.25
Puerto Rico Univ., Mayaguez.
COMSYS: A COMPUTER CODE TO DETERMINE FISSION PRODUCT INVENTORIES AND RELATED QUANTITIES.
A. E. Gileadi, and A. Musalem. 1973, 15p

Descriptors: (*Reactors, Fission products), (*Fission products, *Inventories), (*Computer codes, *C codes).

For abstract, see NSA 30 04, number 11938.

CONF-740537-1 PC$4.25/MF$2.25
Oak Ridge National Lab., Tenn.
DEVELOPMENT OF THE DELAYED-NEUTRON TRIANGULATION TECHNIQUE FOR LOCATING FAILED FUEL IN LMFBR.
R. C. Kryter. 24p

Descriptors: (*Lmfbr type reactors, *Failed element detection), (*Failed element monitors, *Time-of-flight method), (*Reactor protection systems, Failed element monitors), Delayed neutron precursors, Delayed neutrons, Fuel pins, Mockup, Reactor kinetics, Reactor safety, Triangular configuration.

For abstract, see NSA 30 05, number 14586.

COO-2294-1 PC$9.75/MF$2.25
Dartmouth Coll., Hanover, N.H. Thayer School of Engineering.
FLOW REGIMES IN A SIMULATED PWR DOWNCOMER ANNULUS.
G. B. Wallis, J. A. Block, and C. J. Crowley. Jan 74, 135p
Contract AT(11-1)-2294

Descriptors: (*Pwr type reactors, Loss of coolant), (*Loss of coolant, *Fluid flow), Comparative evaluations, Eccs, Functional models, Geometry, Mathematical models, Simulation.

For abstract, see NSA 30 04, number 11939.

DUN-8141 PC$4.00/MF$2.25
Douglas United Nuclear, Inc., Richland, Wash.
PT-N-331, REACTOR COOLANT TEMPERATURE MEASUREMENT WITH ZERO PRIMARY FLOW TO ESTABLISH MAXIMUM FLOW SHUTOFF TIME.
K. N. Cummings. 19 Apr 73, 20p
Contract AT(45-1)-1857

Descriptors: (*N-reactor, *Reactor cooling systems), Heat transfer, Reactor shutdown, Temperature measurement, Testing.

For abstract, see NSA 30 04, number 11916.

EUR-5057 PC$10.50/MF$2.25
Gemeenschappelijke Kernenergiecentrale Nederland N.V., Dodewaard; Samenwerkende Electriciteits-Productiebedrijven N.V., Arnhem (Netherlands).
50 MWE DODEWAARD NUCLEAR POWER PLANT. ANNUAL REPORT, 1972.
Apr 74, 146p
In Dutch. U.S. Sales Only.

Descriptors: (*Dodewaard reactor, *Reactor maintenance), Failures, Nozzles, Performance, Pipe fittings, Pressure vessels, Reactor safety, Repair.

For abstract, see NSA 30 05, number 14587.

EURFNR-1117 PC$3.00/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Angewandte Systemtechnik und Reaktorphysik.
AEROSOL BEHAVIOR IN CLOSED CONTAINERS (PARDISEKO 2).
K. Keller. Aug 73, 14p KFK-1758

Descriptors: (*Sodium cooled reactors, Containment buildings), (*Containment buildings, *Aerosols), (*Reactor accidents, Aerosols), Computer codes, Mathematical models, P codes, Sodium.

For abstract, see NSA 30 04, number 11940.

EURFNR-1136 PC$9.25/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Reaktorentwicklung.
CONTRIBUTION TO THE MODELING OF SODIUM BOILING UNDER ACCIDENT CONDITIONS IN FAST BREEDER REACTORS.
P. Wirtz. Oct 73, 120p

Descriptors: (*Sodium, *Boiling), (*Lmfbr type reactors, Loss of flow), (*Loss of flow, *Mathematical models), B codes, Comparative evaluations, Fluid flow, Heat transfer.

For abstract, see NSA 30 04, number 11941.

EURFNR-1171 PC$5.75/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Angewandte Systemtechnik und Reaktorphysik.
IDENTIFICATION OF THE LMFBR DYNAMIC STATE FOR DETECTION OF COOLANT BOILING.
D. M. Wiberg. Feb 74, 52p KFK-1911
U.S. Sales Only.

Descriptors: (*Lmfbr type reactors, Reactor protection systems), (*Reactor protection systems, *Temperature monitoring), (*Computer codes, *R codes), (*Sodium, *Boiling detection), Burnup, Computer calculations, Contamination, Equations of state, Fuel pins, Fuel-coolant interactions, Loss of flow, Mathematical models, Optimization, Reactor control systems, Reactor kinetics, Reactor noise, Reactor safety, Scram, Spatial distribution, Temperature distribution, Temperature gradients, Transients.

For abstract, see NSA 30 05, number 14588.

EURFNR-1172 PC$4.00/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Angewandte Systemtechnik und Reaktorphysik.
CONSIDERATIONS FOR A EUROPEAN CENTRALIZED RELIABILITY DATA BANK SYSTEM.
L. Cardarola. Oct 73, 13p EUR-4972
U.S. Sales Only.

Descriptors: (*Reactor components, Reliability), (*Reliability, *Information retrieval), Data, Europe, International organizations, Planning.

For abstract, see NSA 30 05, number 14623.

FRNC-TH-475 PC$12.50/MF$2.25
Grenoble-1 Univ., 38 (France).
URANIUM DIOXIDE–SODIUM INTERACTIONS. DEVELOPMENT OF A THEORETICAL MODEL. FITTING OF THIS MODEL TO THE EXPERIMENTAL RESULTS.
P. Syrmalenios. 1973, 186p
In French. U.S. Sales Only.

Descriptors: (*Fuel-coolant interactions, *Mathematical models), (*Meltdown, Fuel-coolant interactions), (*Lmfbr type reactors, Fuel-coolant interactions), C codes, Evaporation, Explosions, Liquid metals, Mass transfer, Sodium, Sodium cooled reactors, Thermal diffusion, Uranium dioxide.

For abstract, see NSA 30 04, number 11942.

GA-A-12045(Add.1) PC$4.00/MF$2.25
General Atomic Co., San Diego, Calif.
ADDENDUM 1: QUALIFICATION OF FORT ST. VRAIN SAFE SHUTDOWN EQUIPMENT FOR STEAM ENVIRONMENT RESULTING FROM PIPE RUPTURES.
E. J. Burwell. 15 Mar 74, 30p
Contract AT(04-3)-633

Descriptors: (*Vrain reactor, *Valves), Performance testing, Pipes, Reactor cooling systems, Reactor shutdown, Ruptures, Scram.

For abstract, see NSA 30 04, number 11943.

GA-A-12883 PC$4.25/MF$2.25
General Atomic Co., San Diego, Calif.
DESIGN AND SEISMIC ANALYSIS OF NUCLEAR PIPING AND VALVES AT FORT ST. VRAIN.
U. K. Rath, L. J. Garvey, and D. A. Wesley. 25 Jan 74, 24p CONF-740606-16
Contract AT(04-3)-633

Descriptors: (*Vrain reactor, *Pipes), Computer codes, Design, Mathematical models, Reactor cooling systems, Seismic effects, Standards, Stress analysis, Valves.

For abstract, see NSA 30 04, number 11945.

GKSS-74/E/8 PC$4.25/MF$2.25
Gesellschaft fuer Kernenergieverwertung in Schiffbau und Schiffahrt m.b.H., Geesthacht-Tesperhude (F.R. Germany).
PROGRESS REPORT ON SAFETY EXPERIMENTS AT THE NUCLEAR POWER PLANT MARVIKEN, SWEDEN.
W. Franke. 1974, 22p
In German. U.S. Sales Only.

Descriptors: (*Iodine, *Fission product release), (*Loss of coolant, *Simulation), (*Containment systems, *Testing), Blowdown, C codes, Computer calculations, L codes, Marviken reactor, P codes, Primary coolant circuits, Ruptures, Z codes.

For abstract, see NSA 30 04, number 11946.

HEDL-SA-645 PC$4.00/MF$2.25
Hanford Engineering Development Lab., Richland, Wash.
DEFORMATION AND FAILURE OF FAST REACTOR CLADDING DURING SIMULATED LOSS-OF-FLOW TYPE TRANSIENTS.
C. W. Hunter, and R. L. Fish. 16p CONF-740443-1
Contract AT(45-1)-2170

Descriptors: (*Lmfbr type reactors, Fuel cans), (*Loss of flow, *Simulation), (*Fuel cans, *Deformation), (*Stainless steel-316, *Physical radiation effects), Failures, Fuel-cladding interactions, Reactor safety experiments, Temperature gradients, Transients.

For abstract, see NSA 30 04, number 11947.

JAPFNR-150 PC$7.50/MF$2.25
Tokyo Univ. (Japan). Faculty of Engineering.
MEASUREMENT OF FLOW AROUND A LOCAL BLOCKAGE IN A FUEL ASSEMBLY.
Y. Toko, and S. Kondo. Jan 74, 90p PNC-N-251-73-4
U.S. Sales Only.

Descriptors: (*Lmfbr type reactors, Fuel assemblies), (*Fuel assemblies, Loss of flow), (*Loss of flow, *Mockup), Distribution, Failures, Flow rate, Fluid flow, Reactor accidents.

For abstract, see NSA 30 04, number 11952.

JUL-1008-RX PC$4.00/MF$2.25
Kernforschungsanlage Juelich G.m.b.H. (F.R. Germany). Zentralinstitut fuer Reaktorexperimente.
GAMMA DOSIMETRY IN NUCLEAR REACTORS.
E. Jeltsch, and W. Graf. Oct 73, 20p
In German. U.S. Sales Only.

Descriptors: (*Gamma dosimetry, *Reactor cores), (*In core instruments, *Gamma detection), Chemical dosemeters, Colorimetric dosemeters, Reactors, Rpl dosemeters, Teflon.

For abstract, see NSA 30 04, number 12003.

JUL-1018-HT PC$6.75/MF$2.25
Kernforschungsanlage Juelich G.m.b.H. (F.R. Germany).
CONTROL ROD AND LOAD CRITERIA FOR A PRISMATIC HIGH-TEMPERATURE REACTOR.
A. Dworak. Nov 73, 73p
In German. U.S. Sales Only.

Descriptors: (*Htgr type reactors, *Control rod worths), (*Dragon reactor, Control rod worths), Fuel cycle, Neutron transport theory, Power density.

For abstract, see NSA 30 04, number 12024.

MRR-125 PC$5.75/MF$2.25
Technische Univ. Muenchen, Garching (F.R. Germany). Lab. fuer Reaktorregelung und Anlagensicherung.
RELIABILITY OF NUCLEAR PLANT.
W. Bastl. Jul 73, 51p CONF-730714-5
U.S. Sales Only.

Descriptors: (*Nuclear power plants, Reactor components), (*Reactor protection systems, *Reliability), (*Reactor components, Reliability), Fault tree analysis, Probability, Safety engineering.

For abstract, see NSA 30 04, number 11953.

MRR-131 PC$8.25/MF$2.25
Technische Univ. Muenchen, Garching (F.R. Germany). Lab. fuer Reaktorregelung und Anlagensicherung.
CONCEPT OF DIGITAL CONTROL IN REACTOR TECHNOLOGY.
D. Beraha. Oct 73, 105p
In German. U.S. Sales Only.

Descriptors: (*Reactor safety, On-line control systems), (*Reactor control systems, On-line control systems), (*On-line control systems, *Reviews), Analog systems, Automation, Digital computers, Equations, Mathematical models, Reactor instrumentation, Reactor kinetics, Reactor operation, Simulation.

For abstract, see NSA 30 04, number 12025.

MRR-133 PC$6.50/MF$2.25
Technische Univ. Muenchen, Garching (F.R. Germany). Lab. fuer Reaktorregelung und Anlagensicherung.
SIMULATION STUDIES ON THE COMPUTERIZED TESTING OF SAFETY DEVICES. PART 1. ANALOG MODEL FOR THE SIMULATION OF FAULTS IN THE EMERGENCY COOLING SYSTEM OF A BOILING WATER REACTOR.
W. Hawickhorst. Dec 73, 67p
In German. U.S. Sales Only.

Descriptors: (*Bwr type reactors, Eccs), (*Eccs, *Failures), (*Loss of coolant, *Simulation), Analog systems, Computer calculations, Performance testing, Reactor cooling systems, Reactor safety, Testing.

For abstract, see NSA 30 04, number 11954.

NP-20018 PC$7.75/MF$2.25
Technische Univ. Muenchen, Garching (F.R. Germany). Lab. fuer Reaktorregelung und Anlagensicherung.
ANNUAL REPORT, 1972.
Jul 73, 93p
In German. U.S. Sales Only.

Descriptors: (*Reactor safety, *Research programs), Computers, Containment, Eccs, Reactor control systems, Reactor kinetics, Reliability, Stochastic processes.

For abstract, see NSA 30 04, number 11955.

NVO-410-21 PC$40.50/MF$2.25
Reynolds Electrical and Engineering Co., Inc., Las Vegas, Nev.
CROSS-INDEX TO AEC-PRESCRIBED INDUSTRIAL SAFETY CODES AND STANDARDS.
Jan 74, 750p
Contract AT(26-1)-410

Descriptors: (*Standards, *Indexes), (*Safety engineering, Indexes), Fire hazards, Industrial plants.

For abstract, see NSA 30 05, number 12662.

ORNL-TM-4211 PC$5.45/MF$2.25
Oak Ridge National Lab., Tenn.
STRESS INDICES AT LUG SUPPORTS ON PIPING SYSTEMS.
E. C. Rodabaugh, W. G. Dodge, and S. E. Moore. May 74, 88p
Contract W-7405-eng-26

Descriptors: (*Pipes, *Supports), (*Pipe fittings, *Stress analysis), (*Computer codes, *L codes), (*Reactor cooling systems, *Safety standards), Comparative evaluations, Computer calculations, Design, Mathematical models, Stresses, Tables, Temperature gradients.

For abstract, see NSA 30 04, number 12004.

ORNL-TM-4269 PC$5.45/MF$2.25
Oak Ridge National Lab., Tenn.
STRESS ANALYSIS OF A RADIAL NOZZLE ATTACHED TO A CYLINDRICAL SHELL UNDER INTERNAL PRESSURE.
A. J. Edmondson. May 74, 64p
Contract W-7405-eng-26

Descriptors: (*Pressure vessels, Nozzles), (*Pipe fittings, *Stress analysis), (*Nozzles, Stress analysis), Comparative evaluations, Cylinders, Design, Differential equations, Mathematical models, Pipes.

For abstract, see NSA 30 05, number 14625.

ORNL-TM-4303 PC$5.45/MF$2.25
Oak Ridge National Lab., Tenn.
DISTRIBUTION AND RELEASE OF TRITIUM IN HIGH-TEMPERATURE GAS-COOLED REACTORS AS A FUNCTION OF DESIGN, OPERATIONAL, AND MATERIAL PARAMETERS.
E. L. Compere, S. H. Freid, and C. W. Nestor. Jun 74, 95p
Contract W-7405-eng-26

Descriptors: (*Htgr type reactors, *Fission product release), (*Computer codes, *T codes), (*Tritium, Fission product release), Computer calculations, Contamination, Differential equations, Distribution, Mathematical models, Primary coolant circuits.

For abstract, see NSA 30 04, number 11956.

ORNL-TM-4443(Rev.1) PC$33.25/MF$2.25
Oak Ridge National Lab., Tenn.
COLLECTION OF PAPERS PRESENTED AT THE NUCLEAR UTILITIES PLANNING METHODS SYMPOSIUM, CHATTANOOGA, TENNESSEE, JANUARY 16--18, 1974.
May 74, 605p CONF-740102-
Contract W-7405-eng-26

Descriptors: (*Nuclear power plants, *Economics), (*Fossil-fuel power plants, Economics), Leading abstract, Meetings, Planning.

For abstract, see NSA 30 04, number 12034.

ORNL-TM-4616 PC$4.25/MF$2.25
Oak Ridge National Lab., Tenn.
HIGH FLUX ISOTOPE REACTOR QUARTERLY REPORT, JANUARY--MARCH 1974.
R. V. McCord, and B. L. Corbett. Jun 74, 24p
Contract W-7405-eng-26

Descriptors: (*Hfir reactor, *Reactor operation), Inspection, Testing.

For abstract, see NSA 30 05, number 14572.

ORNL-4968 PC$10.60/MF$2.25
Oak Ridge National Lab., Tenn.
PLANNING GUIDE FOR HTGR SAFETY AND SAFETY-RELATED RESEARCH AND DEVELOPMENT.
May 74, 475p
Contract W-7405-eng-26

Descriptors: (*Htgr type reactors, Reactor safety), (*Reactor safety, *Research programs), Planning, Reactor accidents, Safety engineering.

For abstract, see NSA 30 05, number 14594.

SRD-R-27 PC$5.50/MF$2.25
UKAEA Safety and Reliability Directorate, Risley.
ANALYSIS OF PHASE IIA BLOWDOWN TESTS: THE DISCHARGE OF HIGH ENTHALPY WATER FROM A SIMPLE VOLUME INTO A CONTAINMENT VOLUME.
A. R. Edwards, and C. Jones. 1974, 49p
U.S. Sales Only.

Descriptors: (*Bwr type reactors, Blowdown), (*Pwr type reactors, Blowdown), (*Loss of coolant, *Simulation), (*Blowdown, Simulation), Bubble growth, Comparative evaluations, Computer calculations, Computer codes, Containment, Data, Differential equations, Equations of state, Fluid mechanics, Mathematical models, Pressure dependence, R codes, Slip flow, Steam, Temperature dependence, Transients, Water.

For abstract, see NSA 30 05, number 14599.

TID-25952-P2 PC$7.60/MF$2.25
Argonne National Lab., Ill.; USAEC, Washington, D.C.
NUCLEAR POWER REACTOR INSTRUMENTATION SYSTEMS HANDBOOK. VOLUME 2.
J. M. Harrer, and J. G. Beckerley. 1974, 282p

Descriptors: (*Pwr type reactors, *Reactor control systems), (*Bwr type reactors, Reactor control systems), (*Gas cooled reactors, Reactor control systems), (*Lmfbr type reactors, Reactor control systems), Computers, In core instruments, On-line control systems, Personnel, Power, Radiation monitors, Radiation protection, Reactor instrumentation, Reactor protection systems, Sodium cooled reactors, Standards.

For abstract, see NSA 30 04, number 12026.

TID-26577 PC$6.75/MF$2.25
Atlantic Richfield Hanford Co., Richland, Wash.
HANFORD DRAFTING PRACTICE MANUAL.
1973, 75p

Descriptors: (*Diagrams, *Standards), (*Hapo, Diagrams), Engineering.

For abstract, see NSA 30 04, number 09426.

TRG-Report-1197 PC$4.25/MF$2.25
UKAEA Reactor Group, Risley.
PROBLEMS OF DETECTION OF BLOCKAGES IN THE COOLANT PASSAGES OF A FAST REACTOR BY MEASUREMENT OF COOLANT TEMPERATURE.
P. G. Bentley. Mar 74, 21p
U.S. Sales Only.

Descriptors: (*Lmfbr type reactors, Fuel assemblies), (*Fuel assemblies, *Flow blockage), Failures, Fuel channels, Liquid flow, Liquid metals, Power density, Primary coolant circuits, Simulation, Sodium, Solid fuels, Swelling, Temperature gradients, Temperature measurement, Transients, Turbulent flow, Variations.

For abstract, see NSA 30 05, number 14600.

UNI-26 PC$4.75/MF$2.25
United Nuclear Industries, Inc., Richland, Wash.
PRODUCTION TEST N-341, A PROCEDURE FOR ESTABLISHING LOW ONCE-THROUGH COOLANT FLOW DURING MAJOR REACTOR COMPONENT MAINTENANCE.
D. L. Whitcomb. 7 Jun 73, 32p
Contract AT(45-1)-1857

Descriptors: (*N-reactor, *Reactor cooling systems), Flow rate, Primary coolant circuits, Reactor maintenance, Repair, Testing, Valves.

For abstract, see NSA 30 04, number 11917.

UNI-26-B PC$5.00/MF$2.25
United Nuclear Industries, Inc., Richland, Wash.
PRODUCTION TEST N-341 SUP 1, A PROCEDURE FOR ESTABLISHING LOW ONCE-THROUGH COOLANT FLOW DURING MAJOR REACTOR COMPONENT MAINTENANCE.
D. L. Whitcomb. 15 Jun 73, 39p
Contract AT(45-1)-1857

Descriptors: (*N-reactor, *Reactor cooling systems), Flow rate, Reactor maintenance, Repair, Testing.

For abstract, see NSA 30 04, number 11918.

UNI-83 PC$4.00/MF$2.25
United Nuclear Industries, Inc., Richland, Wash.
DT-N-347, TEST OF PRESSURIZER BACKUP AND COLD SPRAYS.
T. A. Wellner. 1 Nov 73, 6p
Contract AT(45-1)-1857

Descriptors: (*N-reactor, *Pressurizers), Pressure suppression, Sprays, Testing.

For abstract, see NSA 30 04, number 11919.

UNI-83(Suppl.1) PC$4.00/MF$2.25
United Nuclear Industries, Inc., Richland, Wash.
TEST OF PRESSURIZER BACKUP AND COLD SPRAYS. SUPPLEMENT TO DT-N-347.
T. A. Wellner. 30 Jan 74, 6p
Contract AT(45-1)-1857

Descriptors: (*N-reactor, *Pressurizers), Calibration, Pressure suppression, Scram, Sprays, Testing.

For abstract, see NSA 30 04, number 11920.

WASH-1234 PC$5.45/MF$2.25
USAEC Directorate of Licensing, Washington, D.C.
ENGINEERED SAFETY FEATURES AIR CLEANING SYSTEMS FOR COMMERCIAL LIGHT-WATER-COOLED NUCLEAR POWER PLANTS (A REVIEW OF CURRENT DESIGN AND CONSTRUCTION PRACTICES).
R. W. Zavadoski, H. Gilbert, A. B. Fuller, and C. A. Burchsted. Jun 74, 96p

Descriptors: (*Pwr type reactors, *Air cleaning), (*Bwr type reactors, Air cleaning), Air filters, Containment, Design, Filtration, Fission product release, Iodine, Radiation protection, Reviews, Safety engineering, Safety standards.

For abstract, see NSA 30 05, number 14601.

WASH-1283(Rev.1) PC$7.60/MF$2.25
USAEC, Washington, D.C.
GUIDANCE ON QUALITY ASSURANCE REQUIREMENTS DURING DESIGN AND PROCUREMENT PHASE OF NUCLEAR POWER PLANTS, REVISION 1.
24 May 74, 179p

Descriptors: (*Quality assurance, *Standards), (*Nuclear power plants, Quality assurance), Regulatory guides, Usa.

For abstract, see NSA 30 04, number 11958.

WASH-1311 PC$4.00/MF$2.25
USAEC Directorate of Licensing, Washington, D.C.
COMPILATION OF OCCUPATIONAL RADIATION EXPOSURE FROM LIGHT WATER COOLED NUCLEAR POWER PLANTS, 1969--1973.
T. D. Murphy. May 74, 13p

Descriptors: (*Water cooled reactors, *Personnel dosimetry), (*Nuclear power plants, Personnel dosimetry), Radiation doses, Radiation monitoring, Radiation protection, Reactor safety, Regulations, Safety standards, Tables, Usa.

For abstract, see NSA 30 05, number 14602.

WASH-1314 PC$6.75/MF$2.25
USAEC Office of Operations Evaluation, Washington, D.C.
SUMMARY OF ABNORMAL OCCURRENCES REPORTED TO THE ATOMIC ENERGY COMMISSION DURING 1973.
D. Thompson, E. L. Boyle, and L. H. Grosman. May 74, 75p

Descriptors: (*Nuclear power plants, *Fission product release), (*Reactor components, *Defects), (*Valves, *Performance), Data compilation, Failures, Primary coolant circuits, Reactor safety, Tables, Usa.

For abstract, see NSA 30 04, number 11959.

WASH-1316 PC$4.00/MF$2.25
USAEC Directorate of Regulatory Operations, Washington, D.C.
NUCLEAR POWER PLANT AVAILABILITY AND CAPACITY STATISTICS FOR 1973.
D. Thompson, and L. G. Bell. May 74, 8p

Descriptors: (*Usa, Nuclear power plants), (*Nuclear power plants, *Availability), Comparative evaluations, Electric power, Fossil-fuel power plants, Reactor operation, Tables.

For abstract, see NSA 30 04, number 12037.

WASH-1535-DR(Vol.1) PC$14.50/MF$2.25
USAEC, Washington, D.C.
LIQUID METAL FAST BREEDER REACTOR PROGRAM. VOLUME I. SUMMARY AND BACKGROUND. ENVIRONMENTAL STATEMENT.
Mar 74, 228p

Descriptors: (*Lmfbr type reactors, *Environment), Cost benefit analysis, Economics, Fuel assemblies, Fuel cycle, Fuel fabrication plants, Fuel reprocessing plants, Plutonium, Sociology, Toxicity, Transport, Usa.

For abstract, see NSA 30 04, number 11960.

WASH-1535-DR(Vol.2)(Pt.1) PC$29.25/MF$2.25
USAEC, Washington, D.C.
LIQUID METAL FAST BREEDER REACTOR PROGRAM. VOLUME II. ENVIRONMENTAL IMPACT OF THE LMFBR. ENVIRONMENTAL STATEMENT.
Mar 74, 524p

Descriptors: (*Lmfbr type reactors, *Environment), Accidents, Construction, Fuel cycle, Fuel fabrication plants, Fuel reprocessing plants, Operation, Radiation accidents, Radiation monitoring, Reactor accidents, Reactor operation, Usa.

For abstract, see NSA 30 04, number 11962.

WASH-1535-DR(Vol.2)(Pt.2) PC$29.75/MF$2.25
USAEC, Washington, D.C.
LIQUID METAL FAST BREEDER REACTOR PROGRAM. VOLUME II. ENVIRONMENTAL IMPACT OF THE LMFBR. ENVIRONMENTAL STATEMENT.
Mar 74, 532p

Descriptors: (*Lmfbr type reactors, *Environment), Accidents, Deposition, Fission products, Fluorine, Fuel cycle, Fuel fabrication plants, Fuel reprocessing plants, Human populations, Hydrofluoric acid, Leaks, Plutonium, Radiation accidents, Radiation doses, Radioactive wastes, Reactor cooling systems, Regulatory guides, Tanks, Transport, Usa, Waste management.

For abstract, see NSA 30 04, number 11961.

WASH-1535-DR(Vol.3) PC$29.50/MF$2.25
USAEC, Washington, D.C.
LIQUID METAL FAST BREEDER REACTOR PROGRAM. VOLUME III. IMPLICATION OF LMFBR PROGRAM IMPLEMENTATION. ENVIRONMENTAL STATEMENT.
Mar 74, 526p

Descriptors: (*Lmfbr type reactors, *Environment), Cost benefit analysis, Ecology, Economics, Electric power, Fuel cycle, Fuel fabrication plants, Fuel reprocessing plants, Radioactive wastes, Reactor decommissioning, Sociology, Transport, Usa, Waste management.

For abstract, see NSA 30 04, number 11963.

WASH-1535-DR(Vol.4) PC$40.75/MF$2.25
USAEC, Washington, D.C.
LIQUID METAL FAST BREEDER REACTOR PROGRAM. VOLUME IV. ALTERNATIVE TECHNOLOGY OPTIONS. ENVIRONMENTAL STATEMENT.
Mar 74, 751p

Descriptors: (*Lmfbr type reactors, *Environment), (*Energy sources, *Comparative evaluations), Breeder reactors, Electric batteries, Fossil-fuel power plants, Fuel cells, Gas turbines, Gcfr reactor, Geothermal energy, Hydroelectric power plants, Magnetohydrodynamics, Msre reactor, Natural gas, Oils, Seas, Solar energy, Tar sands, Temperature gradients, Thermionic converters, Thermoelectric generators, Thermonuclear reactors, Tide, Turbogenerators, Usa, Water cooled reactors, Water moderated reactors, Wind.

For abstract, see NSA 30 04, number 11964.

18J. Reactor Materials

AAEC/E-282 PC$4.75/MF$2.25
Australian Atomic Energy Commission Research Establishment, Lucas Heights.
PRODUCTION OF SINTERABLE URANIUM DIOXIDE FROM AMMONIUM DIURANATE. PART I. A REVIEW OF GAS/SOLID CONTACTORS.
A. G. Fane. Apr 74, 34p
U.S. Sales Only.

Descriptors: (*Uranium dioxide, *Production), (*Containers, *Comparative evaluations), (*Ammonium uranates, *Reduction), Adu.

For abstract, see NSA 30 05, number 12313.

AAEC/E-308 PC$4.50/MF$2.25
Australian Atomic Energy Commission Research Establishment, Lucas Heights.
CALCULATIONS AND REVIEW OF CRITICALITY DATA FOR HOMOGENEOUS, WATER-MODERATED, 5 WEIGHT PER CENT ENRICHED URANIUM DIOXIDE SYSTEMS.
P. B. Cripps. Apr 74, 27p
U.S. Sales Only.

Descriptors: (*Slightly enriched uranium, *Criticality), (*Uranium dioxide, Criticality), Comparative evaluations, Computer calculations, Cross sections, Cylindrical configuration, Data, Mixtures, Nuclear fuels, Spherical configuration, Uranium 235, Uranium 238, Water.

For abstract, see NSA 30 05, number 14634.

ARH-2351 PC$5.00/MF$2.25
Atlantic Richfield Hanford Co., Richland, Wash. Separations Chemistry Lab.
SHEAR-LEACH PROCESSING OF N-REACTOR FUEL--CLADDING FIRES.
W. W. Schulz. 15 Feb 72, 39p
Contract AT(45-1)-2130

Descriptors: (*West valley processing plant, *Fires), (*Spent fuel elements, *Reprocessing), (*Decladding, *Fire hazards), Fuel cans.

For abstract, see NSA 30 04, number 09457.

BNWL-SA-5023 PC$4.00/MF$2.25
Battelle Pacific Northwest Labs., Richland, Wash.
MEASUREMENT CONTROL PROGRAM FOR NUCLEAR MATERIALS ACCOUNTING.
R. J. Brouns, F. P. Roberts, and R. A. Schneider. 18p CONF-740622-2

Descriptors: (*Fissile materials, *Safeguards), (*Material unaccounted for, *Errors), (*Material balance area, *Measuring methods), Accounting, Losses, Nuclear materials management.

For abstract, see NSA 30 05, number 13292.

BNWL-tr-115 PC$4.75/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany).
FILTER PROGRAM.
J. G. Wilhelm, H. G. Dillmann, J. Furrer, and K. Gerlach. 9 May 74, 34p
Translation of excerpt from KFK--1818.

Descriptors: (*Fuel reprocessing plants, *Off-gas systems), (*Iodine isotopes, *Adsorption), (*Air filters, *Performance testing), (*Methyl iodide, Adsorption), Fission products, Kernforschungszentrum karlsruhe, Research programs.

For abstract, see NSA 30 04, number 09266.

BNWL-1805 PC$9.50/MF$2.25
Battelle Pacific Northwest Labs., Richland, Wash.
SAFEGUARDS INSPECTION ACTIVITIES AND STRATEGIES USING THE HANFORD COMPLEX AS A MODEL.
R. A. Schneider, and R. J. Sorenson. Jan 74, 128p
Contract AT(45-1)-1830

Descriptors: (*Fissile materials, *Safeguards), (*Hapo, *Nuclear materials management), Efficiency, Inspection, Losses, Nuclear materials diversion.

For abstract, see NSA 30 05, number 13291.

CEA-CONF-2507 PC$5.00/MF$2.25
Societe Belge pour l'Industrie Nucleaire, Brussels; CEA Centre d'Etudes Nucleaires de Saclay, 91 - Gif-sur-Yvette (France).
SUMMARY OF STUDIES BY BELGONUCLEAIRE AND THE CEA ON THE IMPROVEMENT AND STANDARDIZATION OF THE COMETHE CODE USING RESULTS OF IN-PILE EXPERIMENTS.
E. de Meulemeester, N. Hoppe, G. de Contenson, and M. Watteau. 1973, 40p CONF-731004-11
In French. U.S. Sales Only.

Descriptors: (*Fuel pins, *Physical radiation effects), (*Computer codes, *C codes), Burnup, Fast reactors, Heat transfer, Water moderated reactors.

For abstract, see NSA 30 04, number 12016.

DPSPU-69-30-1 PC$4.00/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Savannah River Plant.
EVALUATION OF CENTRIFUGAL CONTACTORS.
D. A. Orth, and J. M. McKibben. Jun 69, 15p
CONF-690609-30
Contract AT(07-2)-1

Descriptors: (*Purex process, *Extraction apparatuses), Centrifuges, Comparative evaluations, Decontamination, Fission products, Mixer-settlers, Spent fuels.

For abstract, see NSA 30 04, number 09267.

EUR-5062 PC$4.00/MF$2.25
Comitato Nazionale per l'Energia Nucleare, Milan (Italy).
EUREX EURATOM--CNEN AGREEMENT. ANNUAL REPORT, 1971.
G. Calleri, and P. Mozzetti. May 74, 17p
In Italian. U.S. Sales Only.

Descriptors: (*Eurex process, *Research programs), Cost, Management, Planning, Reprocessing, Spent fuels.

For abstract, see NSA 30 05, number 12420.

GEAP-12489 PC$4.00/MF$2.25
General Electric Co., Pleasanton, Calif. Vallecitos Nuclear Center.
THERMODYNAMIC DATA PROGRAM INVOLVING PLUTONIA AND URANIA AT HIGH TEMPERATURES. QUARTERLY REPORT NO. 26, NOVEMBER 1, 1973--JANUARY 31, 1974.
E. A. Aitken, M. G. Adamson, and S. K. Evans. Feb 74, 41p
Contract AT(04-3)-893

Descriptors: (*Fuel-cladding interactions, *Research programs), (*Fuel-coolant interactions, Research programs), (*Stainless steel-316, Fuel-cladding interactions), Plutonium oxides, Sodium, Temperature gradients, Uranium oxides.

For abstract, see NSA 30 05, number 13077.

KFK-1521 PC$21.25/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Material- und Festkoerperforschung.
SHORT-TERM IRRADIATION OF OXIDE FUEL PINS OF THE FR 2 HE-LOOP GROUP NO. 2: SPECIFICATION, FABRICATION, IRRADIATION, POSTIRRADIATION EXAMINATION, AND ANALYSIS.
H. Hoffmann, D. Geithoff, and A. Gerken. Dec 73, 362p
In German. U.S. Sales Only.

Descriptors: (*Fuel pins, *Performance testing), (*Uranium dioxide, *Physical radiation effects), Crystal structure, Fabrication, Fr-2 reactor, Grain size, Heat transfer, Irradiation, Specifications, Temperature distribution, Thermal analysis.

For abstract, see NSA 30 05, number 14639.

KFK-1942 PC$4.75/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Material- und Festkoerperforschung.
MECHANICAL PROPERTIES OF CLADDING MATERIALS AFTER ANNEALING WITH CARBIDE FUELS.
O. Goetzmann, P. Hofmann, and Y. Sarikaya. Oct 73, 31p CONF-731065-2
U.S. Sales Only.

Descriptors: (*Stainless steels, *Mechanical properties), (*Stainless steel-316, Mechanical properties), (*Stainless steel-304, Mechanical properties), (*Vanadium base alloys, Mechanical properties), Carburization, Chromium alloys, Elongation, Fuel-cladding interactions, Silicon additions, Titanium alloys, Uranium carbides.

For abstract, see NSA 30 05, number 13129.

LA-5524 PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
HELIUM RELEASE AND MICROSTRUCTURAL CHANGES IN EXP 238 PUO SUB 2 .
B. A. Mueller, D. D. Rohr, and R. N. R. Mulford. Jan 74, 17p
Contract W-7405-eng-36

Descriptors: (*Plutonium 238, Helium), (*Plutonium oxides, Helium), (*Helium, *Degassing), Bubbles, Diffusion, Grain boundaries, Heat treatments, Microstructure.

For abstract, see NSA 30 05, number 13079.

LA-5582-PR PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
ADVANCED PLUTONIUM FUELS PROGRAM. QUARTERLY REPORT, OCTOBER 1--DECEMBER 31, 1973.
R. D. Baker. Apr 74, 33p
Contract W-7405-eng-36

Descriptors: (*Lmfbr type reactors, *Nuclear fuels), (*Fbr type reactors, *Quality assurance),

(*Reactor materials, Quality assurance), Chemical analysis, Fast reactors, Microstructure, Research programs, Testing.

For abstract, see NSA 30 05, number 13080.

ORNL-4969 PC$5.45/MF$2.25
Oak Ridge National Lab., Tenn.
MATHEMATICAL DESCRIPTION OF FISSION PRODUCT TRANSPORT IN COATED PARTICLES DURING POSTIRRADIATION ANNEALS.
R. B. III Evans, and M. T. Morgan. Jun 74, 45p

Descriptors: (*Coated fuel particles, *Fission product release), Annealing, Cesium, Coatings, Diffusion, Equations, Pyrolytic carbon, Thickness, Trapping.

For abstract, see NSA 30 05, number 13082.

PATENT-3 776 508 Not available NTIS
Atomic Energy Commission, Washington, D.C.
PROCESS FOR MASSIVELY HYDRIDING ZIRCONIUM-URANIUM FUEL ELEMENTS.
Patent,
Norman H. Katz. Filed 26 May 61, patented 4 Dec 73, 7p PAT-APPL-113 036
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Nuclear fuel elements, *Patents, Hydrides, Uranium alloys, Zirconium alloys.
Identifiers: PAT-CL-252-301-1-R, *Hydridation.

The invention relates to a process for massively hydriding a uranium-zirconium alloy fuel element, and more particularly to a process of hydriding such an alloy to a very high hydrogen density.

PATENT-3 778 348 Not available NTIS
Atomic Energy Commission, Washington, D.C.
NUCLEAR FUEL ELEMENT WITH AXIALLY ALIGNED FUEL PELLETS AND FUEL MICROSPHERES THEREIN.
Patent,
John D. Sease, and Francis E. Harrington. Filed 3 Jul 72, patented 11 Dec 73, 5p PAT-APPL-268 261
Previously filed 12 Feb 71 as PAT-APPL-115 118, PATENT-3 683 975.
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Nuclear fuel elements, *Patents, Nuclear fuel claddings.
Identifiers: PAT-CL-176-67.

In the patent, elongated single- and multi-region fuel elements are prepared by replacing within a cladding container a coarse fraction of fuel material which includes plutonium and uranium in the appropriate regions of the fuel element and then infiltrating with vibration a fine-sized fraction of uranium-containing microspheres throughout all interstices in the coarse material in a single loading. The fine, rigid material defines a thin annular layer between the coarse fraction and the cladding to reduce adverse mechancial and chemical interactions.

RFP-Trans-158 PC$5.25/MF$2.25
Kernforschungsanlage Juelich G.m.b.H. (F.R. Germany).
STUDY ON THE FURTHER TREATMENT OF SPENT FUEL ELEMENTS FROM THORIUM HIGH-TEMPERATURE REACTORS WITH SPHERICAL FUEL ELEMENTS.
H. Jauer, M. Laser, E. Merz, S. Storch, and U. Tillessen. Apr 73, 44p
Translation of JUL--943-CT.

Descriptors: (*Spent fuel elements, *Reprocessing), Radioactive waste disposal, Radioactive waste storage, Safeguards, Spent fuel storage, Spherical configuration, Thtr-300 reactor.

For abstract, see NSA 30 04, number 09270.

SLA-74-5431 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
FIELD TESTING OF A SYSTEM FOR COMMUNICATION WITH COMMERCIAL SNM SHIPMENTS.
T. A. Sellers, C. S. Sonnier, and J. M. de Montmollin. 26 Jun 74, 18p CONF-740608-11

Descriptors: (*Fissile materials, *Transport), (*Communications, *Performance testing), Reliability, Rf systems, Safeguards, Signals.

For abstract, see NSA 30 05, number 13294.

WAPD-TM-1124 PC$4.50/MF$2.25
Bettis Atomic Power Lab., Pittsburgh, Pa.
FISSION GAS SWELLING AND LONG RANGE MIGRATION AT LOW TEMPERATURES.
C. C. Dollins. Jan 74, 26p
Contract AT(36-1)-Gen-14

Descriptors: (*Nuclear fuels, *Fission product release), (*Fission products, *Migration length), Bubbles, Gases, Kinetics, Krypton, Mathematical models, Swelling, Temperature dependence, Uranium, Van der waals forces, Xenon.

For abstract, see NSA 30 04, number 12017.

Y-DA-2763 PC$8.00/MF$2.25
Oak Ridge Y-12 Plant, Tenn.
STATUS REPORT ON DEVELOPMENT AND EVALUATION OF NERVA FUEL ELEMENT MATRICES.
R. G. Lawton, J. M. Napier, W. R. Prince, and J. C. Rowley. 9 May 69, 98p
Contract W-7405-eng-26

Descriptors: (*Nerva reactor, Fuel elements), (*Fuel elements, *Matrix materials), Binders, Coatings, Fabrication, Graphite, Grinding, Niobium carbides, Openings, Research programs, Thermal expansion, Thermal stresses.

For abstract, see NSA 30 05, number 13083.

Y-DA-3194 PC$8.00/MF$2.25
Oak Ridge Y-12 Plant, Tenn.
MELTING POINTS OF COATINGS OF NERVA FUEL ELEMENTS.
J. M. Napier, and R. K. Bennett. 10 Dec 69, 97p
Contract W-7405-eng-26

Descriptors: (*Nerva reactor, Fuel elements), (*Fuel elements, *Coatings), (*Zirconium carbides, *Melting points), (*Niobium carbides, Melting points), Molybdenum, Openings, Pyrolytic carbon.

For abstract, see NSA 30 05, number 13084.

Y-1452 PC$4.25/MF$2.25
Oak Ridge Y-12 Plant, Tenn.
URANIUM RECOVERY FROM ROVER FUEL ELEMENTS.
E. G. Laggis. 10 Jan 64, 25p
Contract W-7405-eng-26

Descriptors: (*Spent fuel elements, *Reprocessing), (*Uranium, *Separation processes), (*Niobium carbides, *Solubility), Hydrofluoric acid, Hydrogen peroxide, Nitric acid, Rover reactors, Tbp.

For abstract, see NSA 30 04, number 09271.

Y-1948 PC$5.45/MF$2.25
Oak Ridge Y-12 Plant, Tenn.
VALIDATION OF THE KENO CODE FOR NUCLEAR CRITICALITY SAFETY CALCULATIONS OF MODERATED, LOW-ENRICHED URANIUM SYSTEMS.
G. R. Handley, and C. M. Hopper. 13 Jun 74, 68p
Contract W-7405-eng-26

Descriptors: (*Slightly enriched uranium, Criticality), (*Computer codes, *K codes), (*Criticality, *Monte carlo method), Computer calculations, Configuration, Cross sections, Geometry, Uranium 235.

For abstract, see NSA 30 04, number 10501.

18K. Reactor Physics

AAEC/E-269 PC$9.50/MF$2.25
Australian Atomic Energy Commission Research Establishment, Lucas Heights.
AUS MODULE POW: A GENERAL PURPOSE 0,1 AND 2D, MULTIGROUP NEUTRON DIFFUSION CODE INCLUDING FEEDBACK-FREE KINETICS.
J. P. Pollard. Feb 74, 129p
U.S. Sales Only.

Descriptors: (*Computer codes, *P codes), (*Multigroup theory, Computer codes), Computer calculations, Criticality, Cross sections, Data, Disturbances, Eigenvalues, Ibm computers, Moata reactor, Neutron diffusion equation, Neutron flux, Neutron leakage, Neutron transport theory, One-dimensional calculations, Reactor kinetics, Two-dimensional calculations.

For abstract, see NSA 30 04, number 11990.

AAEC/E-307 PC$4.75/MF$2.25
Australian Atomic Energy Commission Research Establishment, Lucas Heights.
ZHEX: A THREE-DIMENSIONAL DIFFUSION CODE FOR HEXAGONAL, Z GEOMETRY.
G. Doherty. Mar 74, 34p
U.S. Sales Only.

Descriptors: (*Multigroup theory, Computer codes), (*Computer codes, *Z codes), (*Fast reactors, *Reactor kinetics), Computer calculations, Finite difference method, Hexagonal configuration, Ibm computers, Neutron diffusion equation, Neutron flux, Neutron leakage, Neutron transport theory, Neutrons, Performance, Three-dimensional calculations.

For abstract, see NSA 30 04, number 11991.

CEA-N-1695 PC$9.50/MF$2.25
CEA Centre d'Etudes Nucleaires de Saclay, 91 - Gif-sur-Yvette (France). Services d'Electronique.
PRACTICAL ON-LINE STUDY FOR ESTIMATING PARAMETERS USING THE KALMAN FILTER.
A. Poujol, G. Zwingelstein, and J. C. Marc. 25 Dec 73, 125p CEA-SES-PUB-SAI-73-206
In French. U.S. Sales Only.

Descriptors: (*Reactivity, *Measuring methods), (*Rapsodie reactor, Reactivity), Algorithms, Functional models, On-line control systems, Sodium, Temperature measurement, Thermocouples.

For abstract, see NSA 30 04, number 11992.

COO-2262-4 PC$5.00/MF$2.25
Massachusetts Inst. of Tech., Cambridge Dept. of Nuclear Engineering.
ANNUAL PROGRESS REPORT, FY1974.
K. F. Hansen, and A. F. Henry. Apr 74, 36p
Contract AT(11-1)-2262

Descriptors: (*Reactor kinetics, *Mathematical models), Finite difference method, Finite element method.

For abstract, see NSA 30 04, number 11993.

EUR-5111 PC$8.00/MF$2.25
Commission of the European Communities, Ispra (Italy). Joint Nuclear Research Center.

ISOTEX-1: A CODE FOR THE EVALUATION OF ISOTOPIC CONCENTRATIONS AND OF RATIOS OF CONCENTRATIONS.
A. Sola. 1974, 96p
In French. U.S. Sales Only.

Descriptors: (*Nuclear fuels, *Burnup), (*Computer codes, *1 codes), Decay, Fission products, Fission yield, Isotope production, Isotope ratio, Reactors.

For abstract, see NSA 30 04, number 11994.

EURFNR-1130 PC$10.75/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Neutronenphysik und Reaktortechnik.
SNOW: A TWO-DIMENSIONAL SN PROGRAM FOR SOLVING THE NEUTRON-TRANSPORT EQUATION IN RECTANGULAR AND CYLINDRICAL GEOMETRY.
C. Guenther, and W. Kinnebrock. Jul 73, 151p
KFK-1826

Descriptors: (*Computer codes, S codes), (*S codes, Neutron transport theory), (*Neutron transport theory, *Discrete ordinate method), Cylindrical configuration, Mathematical models, Multigroup theory, Rectangular configuration, Two-dimensional calculations.

For abstract, see NSA 30 04, number 11995.

FRNC-TH-456 PC$9.00/MF$2.25
Paris-11 Univ., 91 - Orsay (France).
CALCULATIONS OF RESONANT NEUTRON ABSORPTION BY URANIUM AND PLUTONIUM ISOTOPES IN A NUCLEAR REACTOR.
A. Santamarina. 1973, 119p
In French. U.S. Sales Only.

Descriptors: (*Neutron slowing-down theory, *Resonance neutrons), (*Uranium 238, *Self-shielding), (*Uranium 235, Self-shielding), (*Plutonium 239, Self-shielding), A codes, Absorption, Computer calculations, Corrections, Cross sections, Heterogeneous effects, Multigroup theory, Resonance integrals, S codes, Tables, Temperature dependence, Thermal reactors.

For abstract, see NSA 30 04, number 11996.

RT/FI-(74)1 PC$4.00/MF$2.25
Comitato Nazionale per l'Energia Nucleare, Rome (Italy).
ANALYSIS AND CORRELATION OF MASUREMENTS ON SNEAK AND ZPR VI FAST ASSEMBLIES BY THE ENDF/B VERSION 3 CROSS-SECTION DATA FILE.
A. Gandini, M. Petilli, and M. Salvatores. Jan 74, 8p CONF-731015-7
U.S. Sales Only.

Descriptors: (*Neutron reactions, Cross sections), (*Fast reactors, *Reactor kinetics), (*Cross sections, *Computer calculations), Capture, Comparative evaluations, Correlations, Data compilation, Errors, Fission ratio, Group constants, Mathematical models, Multiplication factors, Neutron beams, Sneak reactor, Zpr-6 reactor.

For abstract, see NSA 30 04, number 12000.

18N. Snap Technology

ARCO-3057-17 PC$5.45/MF$2.25
Arco Nuclear Co., Leechburg, Pa.
RADIOISOTOPE POWERED CARDIAC PACEMAKER PROGRAM. QUATERLY PROGRESS REPORT, FEBRUARY 1, 1973–APRIL 30, 1974.
1974, 48p
Contract AT(11-1)-3057

Descriptors: (*Cardiac pacemakers, *Performance testing), Combustion, Dogs, Man, Packaging, Radioisotope batteries, Radioisotope heat sources, Research programs, Temperature dependence.

For abstract, see NSA 30 05, number 12835.

COO-3043-10 PC$7.60/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
EVALUATION OF PRACTICABILITY OF A RADIOISOTOPE THERMAL CONVERTER FOR AN ARTIFICIAL HEART DEVICE. PHASE II. FINAL REPORT.
15 Sep 73, 224p
Contract AT(11-1)-3043

Descriptors: (*Mechanical heart, *Performance testing), (*Plutonium 238, Mechanical heart), Blood circulation, Cost, Design, Performance, Pumps, Radioisotope heat sources, Reliability, Research programs, Safety, Stirling cycle.

For abstract, see NSA 30 05, number 12836.

GKSS-73/E/23 PC$5.75/MF$2.25
Gesellschaft fuer Kernenergieverwertung in Schiffbau und Schiffahrt m.b.H., Geesthacht-Tesperhude (F.R. Germany).
N.S. "OTTO HAHN": TEST REPORT NO. 21. RECONSTRUCTION OF REACTOR AND PROPULSION EQUIPMENT WITH FUEL ELEMENT REPLACEMENT WITHIN THE TIME FROM SEPTEMBER 4, 1972 TO APRIL 3, 1973 AS WELL AS VOYAGE NO. 80 (TEST ROUTE) FROM APRIL 5–14, 1973.
1973, 54p
In German. U.S. Sales Only.

Descriptors: (*Ns otto hahn, *Performance testing), (*Otto hahn reactor, *Reactor fueling), Fuel elements, Propulsion, Reactor maintenance, Reactor start-up, Testing.

For abstract, see NSA 30 04, number 11922.

GKSS-74/E/3 PC$4.00/MF$2.25
Gesellschaft fuer Kernenergieverwertung in Schiffbau und Schiffahrt m.b.H., Geesthacht-Tesperhude (F.R. Germany).
DEVELOPMENT OF A DEVICE FOR THE MEASUREMENT OF FLOW RATES IN THE FDR.
K. R. Froehner, and J. Mueller-Roos. 1974, 19p
In German. U.S. Sales Only.

Descriptors: (*Otto hahn reactor, *Flowmeters), Flow rate, Fluid flow, Ns otto hahn, Performance testing, Primary coolant circuits, Temperature measurement, Thermocouples.

For abstract, see NSA 30 04, number 11921.

LA-5558 PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
APPLICATION OF TECHNOLOGY FROM THE ROVER PROGRAM AND RELATED DEVELOPMENTS.
R. E. Schreiber. Apr 74, 11p
Contract W-7405-eng-36

Descriptors: (*Uhtrex reactor, *Uses), (*Rover reactors, Uses), Mobile reactors, Process heat reactors, Space propulsion reactors.

For abstract, see NSA 30 04, number 11923.

MLM-2001 PC$5.45/MF$2.25
Mound Lab., Miamisburg, Ohio.
ARTIFICIAL HEART HEAT SOURCE PROGRAM: A SUMMARY REPORT.
D. L. Prosser, C. O. Brewer, D. L. Coffey, and E. W. Johnson. 15 Jun 73, 114p
Contract AT(33-1)-Gen-53

Descriptors: (*Plutonium 238, Radioisotope heat sources), (*Mechanical heart, Radioisotope heat sources), (*Radioisotope heat sources, *Design), Capsules, Dose rates, Fabrication, Gamma radiation, Industrial radiography, Neutron flux, Research programs, Welded joints.

For abstract, see NSA 30 05, number 12837.

MLM-2106 PC$7.75/MF$2.25
Mound Lab., Miamisburg, Ohio.
LES 8/9 VIBRATION TEST ON A MULTIHUNDRED WATT FSA.
C. G. Anderson, and C. O. Brewer. 2 May 74, 91p
Contract AT(33-1)-Gen-53

Descriptors: (*Plutonium 238, Radioisotope heat sources), (*Radioisotope heat sources, *Testing), Defects, Helium, Hot cells, Industrial radiography, Leaks, Mechanical vibrations, Plutonium oxides, Radiation protection, Sealed sources, Space vehicles.

For abstract, see NSA 30 04, number 09672.

19. ORDNANCE

19A. Ammunition, Explosives, and Pyrotechnics

AD-783 495/5GA PC$3.75/MF$2.25
Picatinny Arsenal Dover N J
STUDY OF LEVELS OF PACKAGING/PACKING OF CONTAINERIZED AMMUNITION.
Technical rept.,
Richard V. McGaughy. Jun 74, 53p Rept no. PA-TR-4669

Descriptors: *Ammunition, *Transportation, *Containerizing, *Logistics support, Containers, Shelters, Vehicles, Maintenance, Storage, Safety. Identifiers: *Logistics management.

The study required a detailed review of the present ammunition logistics system and a visualization of the system as it would be with maximum use of containers. Natural and induced environments throughout the system were evaluated. Previous studies were reviewed and available data evaluated, including results of studies and tests of other type containers, shelters, and vehicles. User representatives of combat, combat support and combat service support organizations provided information used to assess the impact on missions at the ortganizational, direct support and general support levels, including supply, maintenance, surveillance, equipment changes, and safety. (Author)

AD-783 943/4GA PC$3.00/MF$2.25
Naval Ordnance Station Indian Head Md
CARTRIDGE LEAK TEST PROCEDURES AT THE NAVAL ORDNANCE STATION, INDIAN HEAD, MARYLAND.
Special publication,
Louie Loizou. 5 Aug 74, 22p Rept no. NOS-IHSP-74-111

Descriptors: *Cartridges, *Leakage(Fluid), Gases, Seals, Test methods, Test equipment, Reliability.

The CAD Division Test Branch at the Naval Ordnance Station, Indian Head, Maryland, conducts cartridge leak tests in accordance with MIL-STD-331 (Test 118) and MIL-D-21625 to determine if any gas leak exists in the seal of a given cartridge. This report summarizes the theory and basic operation of the leak test equipment and details the procedures used at Indian Head. (Author)

19D. Explosions, Ballistics, and Armor

AD-783 622/4GA PC$7.50/MF$2.25
Dayton Univ Ohio Research Inst
LABORATORY-SCALE HIGH-EXPLOSIVE CRATERING AND EJECTA PHENOMENOLOGY STUDIES.
Final rept. 1 Jul 71-30 Jun 72,
Andrew J. Piekutowski. Apr 74, 341p AFWL-TR-72-155
Contract F29601-71-C-0132

Descriptors: *High explosives, *Cratering, *Ejecta, Explosive charges, Explosion effects, Sand, Lead azides, Computer programs.
Identifiers: CRATER computer program.

A Cratering Facility was designed and constructed for the purpose of performing laboratory-scale, high-explosive cratering experiments. Fifty-five events were conducted in which centrally initiated, spherical, lead-azide charges were detonated in dry Ottawa sand. Charge configurations for these events ranged from 5-charge-radii height of burst to 15-charge-radii depth of burst. The techniques required to maintain a well characterized 'standard' sandbed were developed and employed for two series of experiments. The 'standard' sandbed was chosen to be that with an in-situ density of 1.801 gm/cc. The main or Overall Series of experiments was conducted in the 'standard' sandbed to determine the relationship between apparent crater size and charge configurations. Realistic levels of reproducibility for various cratering experiments, in terms of apparent crater dimensions, were determined by conducting a Benchmark Series of experiments. (Modified author abstract)

AD-783 941/8GA PC$3.25/MF$2.25
Naval Ordnance Lab White Oak Md
THE GURNEY FORMULA: VARIATIONS ON A THEME BY LAGRANGE.
Technical rept.,
Sigmund J. Jacobs. 21 Jun 74, 37p Rept no. NOLTR-74-86

Descriptors: *Fragmentation ammunition, *Exterior ballistics, Velocity, Detonations, Fragments, Hydrodynamics, Bombs, Explosions, Guided missile warheads, Mathematical prediction.

The Gurney formula for predicting the velocity of fragments from bombs and artillery shells is shown to be modelled after the interior ballistic problem of Lagrange. Though the model differs significantly from the real situation for the interaction of a detonating charge with the metal case, the resulting simple equation gives a fairly good prediction of mean fragment velocity. It is shown that the accuracy of the prediction can be improved by altering one constant term in the equation. Experimental results on the velocity of fragments and on the velocity of expansion of metal cylinders are analyzed. A new set of Gurney constants is given for the ten most frequently used explosives for both the original formula and the proposed modified form. Precautions which must be taken in defining the Gurney constant and in applying the equation are discussed. (Modified author abstract)

LA-5548-MS PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
EXPERIMENTAL OBSERVATIONS OF UNDERWATER DETONATIONS NEAR THE WATER SURFACE.
B. G. Craig. Apr 74, 19p
Contract W-7405-eng-36

Descriptors: (*Underwater explosions, *Performance testing), (*Detonations, Performance testing), Depth, Explosives, Fluid flow, Wave propagation.

For abstract, see NSA 30 04, number 12181.

PATENT-3 771 418 Not available NTIS
Department of the Army Washington D C
ANTI-SPALL LIGHTWEIGHT ARMOR.
Patent,
Joseph E. Gulbierz, and Charles F. Bohan. Filed 29 Sep 71, patented 13 Nov 73, 6p Rept nos. PAT-APPL-184 845,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Patents, *Armor, *Military vehicles, Steel, Hardness, Spallation, Tensile strength, Elastic properties.
Identifiers: PAT-CL-89-36-A.

The patent concerns a shock absorbent layered combination of materials. It comprises: an outer layer possessing a tensile strength of between 10 to the 4th power and 10 to the 6th power pounds per square inch and an elastic modulus of between 10 to the 5th power and 10 to the 8th power pounds per square inch; and a deformable inner layer rigidly adhered to said outer layer, wherein the material constituting said outer layer possesses both a higher tensile strength and a higher elastic modulus than the material constituting said inner layer.

SLA-74-165 PC$10.25/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
SHOCK INITIATION AND DETONATION PROPERTIES OF HOMOGENEOUS EXPLOSIVES.
D. R. Hardesty, and P. C. Lysne. May 74, 143p
Contract AT(29-1)-789

Descriptors: (*Chemical explosives, *Detonations), Chemical reaction kinetics, Decomposition, Equations of state, Impact shock, Methane, Nitrogen compounds, Shock waves, Wave propagation.

For abstract, see NSA 30 04, number 12165.

SLA-74-200 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
CERTAIN IMPORTANT ASPECTS ASSOCIATED WITH THE HE CONTAINMENT PROBLEM.
D. M. Webb, and P. J. Chen. Apr 74, 12p
Contract AT(29-1)-789

Descriptors: (*Chemical explosions, *Containment systems), (*Structural models, *Design), Chemical explosives, Computer codes, Nuclear weapons, Testing.

For abstract, see NSA 30 04, number 09462.

UCID-16468 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
DEVIATION FROM FLAT IMPACT WITH LLL'S TWO-STAGE LIGHT GAS GUN DUE TO PROJECTILE TILTING AND DISTORTION.
A. C. Mitchell, and B. L. Hord. 22 Mar 74, 13p
Contract W-7405-eng-48

Descriptors: (*Plates, *Impact tests), (*Projectiles, Impact tests), Acceleration, Gas flow, Impact shock, Impact strength, Lawrence livermore laboratory, Velocity.

For abstract, see NSA 30 04, number 12197.

UCID-16477 PC$5.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
PERFORMANCE TESTING OF THE 19-MM SMOOTHBORE GUN SYSTEM NO. 5.
C. A. Honodel. 10 Apr 74, 37p
Contract W-7405-eng-48

Descriptors: (*Guns, *Performance testing), Construction, Equations of state, Impact shock, Operation, Projectiles, Safety, Shock waves, Solids, Velocity.

For abstract, see NSA 30 04, number 12198.

19E. Fire Control and Bombing Systems

AD-783 811/3GA PC$9.50/MF$2.25
Naval Postgraduate School Monterey Calif
NO-DROP BOMB SIMULATION USING MICRO-COMPUTERS.
Master's thesis,
Andrew John Pease. Jun 74, 126p

Descriptors: *Bombing, *Digital simulation, *Naval training, *Pilots, Bomb trajectories, Computer programs, Tracking, Position finding, Velocity, Impact point, FORTRAN, Numerical integration, Microcomputers, Theses.

The implementation of a no-drop bomb simulation system on a micro-computer is presented. The bomb trajectory algorithms supplied by Mr. Lee Thomson, China Lake Naval Weapons Center, formed a base for the simulation programs. The simulation program was written in FORTRAN to test the four phases of the system: tracking, position and velocity fitting, trajectory simulation, and impact point calculation. Translated PL/M programs form a base for the micro-computer implementation. (Author)

AD-783 940/0GA PC$3.00/MF$2.25
Naval Postgraduate School Monterey Calif
TWO SEQUENTIAL CEP TESTS.
Interim rept.,
D. R. Barr. Jun 74, 18p Rept no. NPS-55BN74061

Descriptors: *Circular error probable, *Statistical tests, Sequential analysis, Sampling, Miss distance, Hypotheses.
Identifiers: Nonparametric statistics.

Two sequential procedures for testing hypotheses about the circular error probable (CEP) of a weapon system under fixed conditions are discussed. One of the tests is the sequential probability ratio test based on a Rayleigh model for radial miss distances. The second procedure is nonparametric, and is essentially a 'control chart' approach based upon the proportions of weapon impacts observed inside the specified CEP. Average sample sizes required for the procedures are compared as well as operating characteristics. (Author)

19F. Guns

AD-783 494/8GA PC$4.00/MF$2.25
Rock Island Arsenal Ill General Thomas J Rodman Lab
PRODUCT IMPROVEMENT PROGRAM - MACHINE GUN, CALIBER .50, M85.
Technical rept.,
D. M. Costantino. Jun 74, 89p Rept no. WVT-TR-74017

Descriptors: *Machine guns, Gun components, Maintainability, Modification, Quality assurance, Firing tests(Ordnance), Life expectancy.
Identifiers: M-85 guns(Cal .50), Product improvement, Design changes.

Operational and maintenance problems have been reported from the field on the caliber .50 machine gun, M85. Redesign studies and initial firing tests of improved components indicate that, while some problems are inherent in the basic design, most can be eliminated or significantly decreased by design and material changes and proper operating procedures. (Author)

AD-783 661/2GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
THE PPD-40, PPSH-41, AND PPS-43,
A. Blagonravov, S. Simonov, and I. Ghistyakov. 26 Apr 74, 8p Rept no. FSTC-HT-23-0036-74

Trans. of Tekhnika-Molodezhi (USSR) n4 p40-41 1973.

Descriptors: *Machine guns, *USSR, Weight, Handling, Translations.
Identifiers: *Submachine guns.

The submachine gun was an important Soviet weapon during the years of World War II. Its lightness and ease of handling made it an ideal weapon for close combat. The development of the submachine gun reflected the development of Soviet mass production techniques demanded by the pressures of the War.

AD-783 955/8GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
SHOULDER-FIRED ANTITANK WEAPONS,
V. Nadin. 9 Aug 73, 7p Rept no. FSTC-HT-23-2508-72
Trans. of Voennye Znaniya (USSR) n11 p30-31 1971.

Descriptors: *Antitank weapons, *Shoulder launched weapons, *USSR, Armor piercing ammunition, Muzzle velocity, Firing mechanisms(Weapon), Gun sights, Hazards, Safety, Translations.

Antitank weapons such as the RPG-2 and RPG-7, which appeared late in the Second World War, are now among the most commonly used weapons designed to combat armored targets. The purpose weapons is to destroy tanks, self-propelled artillery weapons, armored transportors, armored vehicles and various field type strong barriers and emplacements. The weapons fire powerful armor-penetrating shells, capable of penetrating the armor of any modern tank and destroying its crew, armament, ammunition and equipment. The operation and characteristics of these weapons is discussed briefly.

20. PHYSICS

20A. Acoustics

AD-783 513/5GA PC$3.25/MF$2.25
Naval Research Lab Washington D C
COBB SEAMOUNT FIXED PLATFORM EXPERIMENT USING THE USNS BARTLETT (T-AGOR-13).
Memorandum rept.,
Caldwell McCoy, Jr. Jun 74, 30p Rept no. NRL-MR-2806

Descriptors: *Underwater sound, Seamounts, Pacific Ocean, Platforms, Sound transmission.
Identifiers: MARK 6 projector, Cobb seamount, AGOR 13 vessel, North Pacific Ocean.

The USNS BARTLETT (T-AGOR-13) was used to perform an experiment at Cobb Seamount during July 25-30, 1973. Two acoustic sources were lowered from the BARTLETT to the top of Cobb Seamount with the aid of scuba divers. The sources were operated concurrently and independently on a selected transmission schedule. The purpose of the experiment was to conduct a long range fixed-platform sound propagation study in the Pacific with the two sources located on the East end of Cobb Seamount. (Author)

AD-783 721/4GA Reprint
Massachusetts Inst of Tech Cambridge Research Lab of Electronics
QUARTERLY PROGRESS REPORT NO. 114,
Uno Ingard, and Vijay K. Singhal. 1974, 6p
Contract N00014-67-A-0204-0019
Report on Physical Acoustics. See also AD-778 806.
Availability: Pub. in Quarterly Progress Report No. 114, sect 11, p95-98, 15 Jul 74.

Descriptors: *Acoustic fields, *Ducts, *Pipes, Sound transmission, Wake, Interactions, Vortices, Cylindrical bodies, Modes, Model tests, Instability.
Identifiers: Physical acoustics.

The document comprises two studies, A and B. (A) A sound pulse is produced in a duct from a sound source that can be either on the upstream or downstream side of a side-branch cavity. Results at zero flow are shown. A theoretical analysis is under way. (B) An experiment deals with the acoustically induced instability resulting from interaction between the wake behind a cylinder and the first transverse acoustic mode in a pipe. A theoretical analysis of the problem is under way. (Author)

AD-783 808/9GA PC$3.25/MF$2.25
Air Force Academy Colo
THE DESIGN OF A LOW COST SOUND LEVEL METER.
Final rept. 1 Jan 72-1 Jul 74,
John D. Griffiths. Apr 74, 44p Rept no. USAFA-TR-74-6 EPA-550/9-74-008

Descriptors: *Measuring instruments, Sound, Noise, Acoustic measurement.
Identifiers: *Sound level meters.

Conventional sound level meters generally use precision ceramic microphones and discrete solid state circuitry. This report describes a design using an electret microphone and integrated circuit operational amplifiers. The advantages of this design are low cost, ease of manufacture, stable gain, and low power consumption. Construction details are included to permit local manufacture. The complete instrument is capable of meeting the Type 2, General Purpose Sound Level Meter, requirements of ANSI S1.4-1971, American National Standard Specification for Sound Level Meters. (Author)

COM-74-50699/9GA PC-GPO/MF$2.25-NTIS
National Bureau of Standards, Washington, D.C. Mechanics Div.
REVIEW OF REVERBERANT SOUND POWER MEASUREMENT STANDARD AND RECOMMENDATIONS FOR FURTHER RESEARCH.
Final technical note.
Aug 74, 24p NBS-TN-841
Prepared by D. Lubman and Associates, Woodland Hills, Calif. Library of Congress Catalog Card No. 74-600132.
Paper copy available from GPO $0.60.

Descriptors: *Acoustic measurement, Standards, Reverberation, Noise(Sound), Power measurement.

The report presents a critical review of American National Standard S1.21-1972, 'Methods for the Determination of Sound Power Levels of Small Sources in Reverberation Rooms.' This standard, as now embodied, represents a major advance in the state-of-the-art of reverberation room measurement of sound power. This report was prepared in order to identify additional analytical and experimental information needed for further refinement of this standard. The report presents a detailed critique of specific items in the standard. Indications are given of both general research areas for statistical room acoustics and of specific research areas for improved reverberant room sound power measurements.

20B. Crystallography

AD-783 705/7GA PC$3.25/MF$2.25
Office of Naval Research Arlington Va
THE X-RAY STRUCTURE DETERMINATION OF THE 1:1 CHARGE TRANSFER COMPLEX OF NAPHTHALENE AND TETRACHLOROPHTHALIC ANHYDRIDE AT 120K.
Technical rept.,
A. K. Wilkerson, J. B. Chodak, and C. E. Strouse.
8 Aug 74, 29p Rept no. TR-19
Contract N00014-69-A-0200-4012

Descriptors: *Naphthalenes, *Crystal structure, Deuterium compounds, Charge transfer, Complex compounds, Chlorine compounds, Molecular structure, X ray diffraction.
Identifiers: *Phthalic anhydride.

The crystal structure of the weak charge transfer complex of 1:1 perdeuterated naphthalene and tetrachlorophthalic anhydride has been determined at 120K. The structure was solved with Patterson and Fourier techniques and refined by least squares. The component molecules are stacked alternately in infinite chains along the b axis. The accurate, low temperature, structural parameters obtained for naphthalene and tetrachlorophthalic anhydride in the complex are within experimental error identical to those observed in the pure materials. (Modified author abstract)

CEA-CONF-2595 PC$4.25/MF$2.25
CEA Centre d'Etudes Nucleaires de Grenoble, 38 (France).
GROWTH OF EPITAXIAL SUBSTITUTED GARNET FILMS BY HYDROTHERMAL SYNTHESIS.
B. Ferrand, J. Geynet, D. Challeton, J. Daval, and J. C. Joubert. 2 Nov 73, 25p CONF-730994-2
U.S. Sales Only.

Descriptors: (*Garnets, *Crystal growth), Aqueous solutions, Erbium compounds, Europium compounds, Films, Gadolinium compounds, Gallium compounds, Iron compounds, Magnetic materials, Potassium hydroxides, Sodium hydroxides, Yttrium compounds.

For abstract, see NSA 30 04, number 10218.

COM-74-50721/1GA Not available NTIS
National Bureau of Standards, Washington, D.C.
THE DYNAMICAL SCATTERING AMPLITUDE OF AN IMPERFECT CRYSTAL. III. A DYNAMICAL DIFFRACTION EQUATION FOR TOPOGRAPHY IN THE SPATIAL COORDINATE REPRESENTATION.
Final rept.,
M. Kuriyama, and J. G. Early. Jan 74, 11p
Pub. in Acta Crystallographica, A30 p525-535 Jan 74.

Descriptors: *X ray diffraction, Crystal defects, Laue method, Crystal lattices.

Based on a general dynamical theory of diffraction, an integral equation for dynamical diffraction in imperfect crystals is obtained in the spatial coordinate representation. This equation is derived for diffraction topography in the symmetrical Laue geometry from the basic dynamical equation of diffraction previously derived in the momentum representation. Discussion is presented on an interpretation of this integral equation beyond the given diffraction geometry. This equation can be considered as a basic equation for diffraction topography.

COM-74-50734/4GA Not available NTIS
National Bureau of Standards, Washington, D.C.
EXTENSION OF THEORY OF GROWTH OF CHAIN-FOLDED POLYMER CRYSTALS TO LARGE UNDERCOOLINGS.
Final rept.,
John I. Lauritzen, Jr., and John D. Hoffman. Oct 73, 13p
Pub. in Jnl. of Applied Physics, v44 n10 p4340-4352 Oct 73.

Descriptors: *Crystal growth, *Polymers, *Stereochemistry, *Lamellar structure, Molecular structure, Polystyrene, Polyethylene, Nucleation.
Identifiers: *Undercooling.

The kinetic theory of the rate of growth G and the initial lamellar thickness of chain-folded crystals is extended so that it is applicable at high undercoolings. Attention is centered on the details of how the first step element and the first fold are put down on the substrate. A parameter which apportions the free energy of attachment of the step element between the forward and backward reactions, is used to denote variations in this process. Expressions for G are derived from flux equations for two limiting cases: regime I, single surface nucleation act with rapid substrate completion and regime II, numerous surface nucleation acts with very slow substrate completion. Data from the literature on G for isotactic polystyrene (regime II) and polyethylene single crystals (regime I) are analyzed to obtain surface free energies, and these are used to predict the lamellar thickness of these polymers. A discussion is given of the segmental transport effects that dominate the behavior of G at high undercoolings in bulk polymers.

20D. Fluid Mechanics

AD-783 516/8GA PC$3.00/MF$2.25
Naval Weapons Lab Dahlgren Va
A COMMENT ON THE FOURIER THEOREM.
Technical rept.,
A. V. Hershey. Jun 74, 16p Rept no. NWL-TR-3145

Descriptors: *Drag, *Fourier analysis, Submarines, Friction, Turbulence, Fourier transformation, Plane waves, Partial differential equations, Numerical integration.
Identifiers: Wave drag.

A review of the use of rake surveys for the experimental determination of friction resistance has indicated a need for a minor reinterpretation of available formulae. A review of the use of the Fourier theorem for the experimental determination of wave resistance has indicated a need for a major change in formulation. (Author)

AD-783 546/5GA PC$3.00/MF$2.25
Virginia Polytechnic Inst and State Univ Blacksburg Dept of Engineering Science and Mechanics
NONLINEAR PROPAGATION OF WAVE-PACKETS ON FLUID INTERFACES.
Research rept. May-Jul 74,
Ali Hasan Nayfeh. Jul 74, 25p Rept no. VPI-E-74-17
Contract N00014-72-A-0136-0002

Descriptors: *Two dimensional flow, *Incompressible flow, Inviscid flow, Partial differential equations, Nonlinear differential equations, Gravity waves, Dispersion relations, Numerical integration.

The method of multiple scales is used to derive a nonlinear partial differential equation which describes the evolution of two-dimensional wave-packets on the interface of two semi-infinite, incompressible, inviscid fluids of arbitrary densities, taking into account the effect of the surface tension, this equation is used to show that the stability of uniform wavetrains depends on the wavelength, the surface tension, and the density ratio. The results show that gravity waves are unstable for all density ratios except unity, while capillary waves are stable unless the density ratio is below approximately 0.1716. Moreover, the presence of surface tension results in the stabilization of some waves which are otherwise unstable. (Author)

AD-783 568/9GA PC$3.00/MF$2.25
Office of Naval Research London (England)
EUROMECH 46: NUMERICAL AND EXPERIMENTAL INVESTIGATIONS OF THE STABILITY OF BOUNDARY LAYERS,
Harold G. Elrod. 29 May 74, 22p Rept no. ONRL-R-2-74

Descriptors: *Boundary layer flow, *Numerical analysis, Meetings, Stability, Great Britain, West Germany.

A summary is given of papers presented at Euromech 46, a conference on boundary-layer stability, for which no proceedings will be issued.

AD-783 571/3GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
FLOW OF A TWO-PHASE MEDIUM WITH SOLID PARTICLES AROUND A THIN PROFILE,
N. A. Manadaliev, and Kh. A. Rakhmatulin. 1 Jul 74, 13p Rept no. FTD-HT-23-1474-74
Edited trans. of mono. from Volny v Neuprugikh Sredakh, Kishinev, 1970 p146-1152, by Catherine M. Barber.

Descriptors: *Jets, *Supersonic flow, Two phase flow, Supersonic nozzles, Wedges, Fluid flow, Translations, USSR.

In the report is offered a model of the flow of a two-phase medium around a thin profile with consideration of the effect of the reflection of particles from the profile's surface. A solution is given to certain linearized problems with various hypotheses relative to the volume occupied by the particles and the friction between the phases.

AD-783 599/4GA Reprint
University of Southern California Los Angeles Dept of Aerospace Engineering
VORTEX PAIRING: THE MECHANISM OF TURBULENT MIXING-LAYER GROWTH AT MODERATE REYNOLDS NUMBER.
Final rept. 1 Apr 65-30 Jun 73,
C. D. Winant, and F. K. Browand. 25 Jun 73, 27p
Contract N00014-67-A-0269-0015
Availability: Pub. in Jnl. of Fluid Mechanics, v63 pt2 p237-255 1974.

Descriptors: *Turbulent flow, *Vortices, Flow fields, Flow visualization, Laminar flow, Measurement.
Identifiers: Vortex pairing.

A mixing layer is formed by bringing two streams of water, moving at different velocities, together in a lucite-walled channel. The Reynolds number, based on the velocity difference and the thickness of the shear layer, varies from about 45, where the shear layer originates, to about 850 at a distance of 50 cm. Dye is injected between the two streams just before they are brought together, marking the vorticity-carrying fluid. Unstable waves grow, and fluid is observed to roll up into discrete two-dimensional vortical structures. These turbulent vortices interact by rolling around each other, and a single vortical structure, with approximately twice the spacing of the former vortices, is formed. This pairing process is observed to occur repeatedly, controlling the growth of the mixing layer. (Modified author abstract)

AD-783 657/0GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
INTERPENETRATING MOTION OF VISCOUS AND VISCOPLASTIC INCOMPRESSIBLE LIQUIDS,
V. P. Nochevko, and V. E. Gubin. 22 Apr 74, 14p Rept no. FTD-HT-23-1660-73
Trans. of Nauchno-Issledovatelskii Institut po Transportu i Khraneniyu Nefti i Nefteproduktov, Uva. Trudy (USSR) n7 p59-68 1970.

Descriptors: *Liquids, *Viscous flow, *Laminar flow, Equations of motion, Viscosity, Viscoplastic properties, Mathematical models, Petroleum products, Translations, USSR, Pipelines, Stresses, Mixtures.

The transportation of petroleum in a mixture with an aqueous solution of surfactants is regarded as the interpenetrating motion of two immiscible liquids. Expressions are derived for the stresses in the motion of these two liquids.

AD-783 700/8GA PC$7.25/MF$2.25
Michigan Univ Ann Arbor Dept of Naval Architecture and Marine Engineering
LASER DOPPLER VELOCIMETER EVALUATION AND MEASUREMENTS IN A FLOW WITH DRAG REDUCTION.
Doctoral thesis,
Peter David Fitzgerald. 1974, 84p
Sponsored in part by Office of Naval Research, Arlington, Va.

Descriptors: *Drag reduction, Polymers, Hydrodynamics, Degradation, Concentration(Chemistry), Laser velocimeters, Doppler systems, Pressure gages, Theses.
Identifiers: *Drag reducing fluids.

Drag reduction, effects of polymer degradation and mean flow characteristics of a series of drag reducing polymer flows using tap water as the solvent were obtained using a laser Doppler velocimeter and a pressure transducer. A closed-loop flow system, using a centrifugal pump for recirculation of the flow, allowed a study of the degradation of the 10, 20, 40, 50 and 100 ppm concentrations of Separan AP-30 polymer injected into the flow. Results indicate a significant degradation for all concentrations after just one pass through the flow system. For subsequent passes through the system the non-linear degradation of the polymer flow is observed asymptotically approaching the wall shear stress value of water. Velocity profiles at maximum drag reduction for 10, 20 and 40 ppm concentrations were obtained. An analysis of the optical system used was presented. A complete description of the signal processing system was given.

AD-783 713/1GA Not available NTIS
Mcgill Univ Montreal (Quebec) Dept of Mechanical Engineering
THE DYNAMICAL BEHAVIOUR OF CYLINDRICAL STRUCTURES IN AXIAL FLOW,
M. P. Paidoussis. 23 Oct 73, 24p
Availability: Pub. in Annals of Nuclear Science and Engineering, v1 p83-106 1974.

Descriptors: *Axially symmetric flow, *Cylindrical bodies, *Hydrodynamics, Instability, Vibration, Wear, Equations of motion, Oscillation, Mathematical models, Hydraulic equipment, Nuclear reactors, Canada.

A review is made of the effect of axial flow on cylindrical structures. Axial flow is related to fluidelastic instabilities at sufficiently high flow velocities. For the range of flow velocities and other parameters pertaining to most industrial systems, the effect of purely axial, uniform, steady flow is to damp free motions. Departures from such ideal flow conditions induce small amplitude vibration, termed sub-critical vibration. The underlying mechanism of this vibration is examined, and the various means available for predicting its amplitude are discussed. (Modified author abstract)

AD-783 730/5GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
BODIES OF REVOLUTION WITH MINIMUM DRAG COEFFICIENT AND LOW HEAT TRANSFER AT HIGH SUPERSONIC FLIGHT VELOCITIES,
G. L. Grodzovskii. 9 May 74, 16p Rept no. FSTC-HT-23-714-70
Trans. of Akademiya Nauk SSSR. Izvestiya. Mekhanika Zhidkosti i Gaza, n5 p79-88 1968.

Descriptors: *Hypersonic characteristics, *Bodies of revolution, Low drag airfoils, Heat transfer, Aerodynamic configurations, Optimization, USSR, Translations.

The optimal shape of a body of revolution with minimum drag at hypersonic velocities is investigated on the basis of modified Newtonian theory and theory of self-modeling hypersonic flow. It is shown that bodies of optimal form also have a low coefficient of heat transfer, considerably lower than that of conical bodies. It is established experimentally that the optimal properties of the bodies of revolution examined are retained at moderate supersonic flight velocities.

AD-783 791/7GA PC$3.75/MF$2.25
Naval Postgraduate School Monterey Calif
LOW SPEED FLOW VISUALIZATION USING HOLOGRAPHY AND THE DEVELOPMENT OF A RAPID DATA REDUCTION SYSTEM FOR HOLOGRAPHIC INTERFEROMETRY.
Master's thesis,
David Lawless Pope. Jun 74, 62p Rept no. NPS-57CO74062

Descriptors: *Flow visualization, *Holography, *Interferometry, *Low velocity, *Wind tunnel tests, *Data reduction, Data processing, Computer applications, Mathematical models, Injection, Theses, Gas flow.
Identifiers: Fringe shifts, Interferometric holography.

Flow visualization of low speed flow has been obtained by the injection of a thin stream of gas with a refractive index which differs from that of the uniform flow in the wind tunnel. A frozen fringe hologram of the introduction of this gas indicates regions of fringe shift. A pathline is produced by connecting points of maximum fringe shift. A rapid means has been developed to handle data on fringe formation from a photograph of a reconstructed holographic interferogram. Data points are gathered using a digitizer and a mini-computer. (Modified author abstract)

AD-783 907/9GA PC$3.75/MF$2.25
Massachusetts Inst of Tech Cambridge Aerophysics Lab
INITIAL RESULTS WITH A PLASMA INJECTION WAKE SIMULATOR.
Charles W. Haldeman, James B. Coffin, and John I. Cofer. Mar 74, 52p Rept nos. TR-188, Scientific-2 AFCRL-TR-74-0176
Contract F19628-72-C-0022

Descriptors: *Atmosphere entry, *Plasma sheaths, *Wake, *Wind tunnel tests, Simulation, Injection, Ionization, Arc heaters, Blunt bodies, Conical bodies, Pressure, Electron density, Reentry vehicles, Model tests.
Identifiers: Plasma injection.

Research extending plasma injection techniques for ground simulation of the ionized wakes of reentry vehicles is reported. In the technique reported a blunt cone model is mounted in a conventional continuous M=4 wind tunnel with a support pylon. Plasma injected from an arc jet located in the model nose flows over the model and forms an ionized wake in the wind tunnel flow. Operating over the altitude range from 100,000 to 140,000 feet, impact pressure and electron density profiles of the ionized wake were obtained. (Modified author abstract)

AD-783 911/1GA PC$4.00/MF$2.25
General Electric Corporate Research and Development Schenectady N Y
TECHNIQUES FOR INJECTION AND ACCELERATION OF PARTICLES BY ULTRA HIGH SPEED GAS JETS.
Final technical rept. 5 Jan-20 Nov 73,
Elwin C. Bigelow, Henry T. Nagamatsu, Russell E. Sheer, Jr., and James C. F. Wang. Feb 74, 90p Rept no. SRD-73-161 ARL-74-0013
Contract F33615-73-C-4051

Descriptors: *Hypersonic flight, *Wind tunnel tests, *Two phase flow, Particles, Solids, Liquids, Injection, Acceleration, Nozzle gas flow, High rate, Jet flow, Supersonic nozzles.
Identifiers: *Particulated flow.

An investigation was conducted to accelerate solid and liquid particles in single and two stage nozzles with air and helium as the carrier gas in the primary nozzle. Methods were developed for injection and the particles were accelerated to supersonic air and helium velocities. Schlieren and light scattering systems were used to observe the shock waves in the flows and the liquid and solid particle streams discharging from the turning vanes and the nozzles. Laser doppler velocimeter technique was utilized to measure the mean velocity and the turbulence level of the liquid and solid particles in a supersonic air flows. (Modified author abstract)

AD-783 942/6GA PC$4.50/MF$2.25
Naval Ordnance Lab White Oak Md
A STUDY OF THE EFFECT OF PRESSURE GRADIENT ON THE EDDY VISCOSITY AND MIXING LENGTH FOR INCOMPRESSIBLE EQUILIBRIUM TURBULENT BOUNDARY LAYERS.
Technical rept.,
W. J. Glowacki, and S. W. Chi. 30 May 74, 114p Rept no. NOLTR-74-105

Descriptors: *Turbulent boundary layer, *Incompressible flow, *Pressure gradients, Shear stresses, Two dimensional flow, Velocity, Problem solving, Mathematical models, Skin friction.
Identifiers: *Eddy viscosity, *Mixing length, Velocity profiles.

Shear stress, eddy viscosity, and mixing length distributions corresponding to five two-dimensional, incompressible equilibrium turbulent boundary layers were calculated by substituting measured velocity profile data into the governing equations. The five flows cover the range from moderate adverse pressure gradient to strong favorable pressure gradient. (Modified author abstract)

LBL-2480 PC$5.45/MF$2.25
California Univ., Berkeley Lawrence Berkeley Lab.
NUMERICAL STUDY OF VISCOUS FLOWS PAST A CIRCULAR CYLINDER: APPLICATION OF CHORIN'S METHOD.
B. Davari. Dec 73, 59p
Contract W-7405-eng-48

Descriptors: (*Viscous flow, *Numerical solution), Cylinders, Navier-stokes equation, Reynolds number.

For abstract, see NSA 30 04, number 12084.

SLA-73-5975 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
PRESSURE AND TEMPERATURE MEASUREMENTS IN A COLD-WALL HYPERSONIC TURBULENT BOUNDARY LAYER.
C. W. Peterson. 1973, 17p CONF-740613-2

Descriptors: (*Hypersonic flow, Boundary layers), (*Boundary layers, *Pressure measurement), Mach number, Temperature distribution, Turbulence.

For abstract, see NSA 30 05, number 12649.

SLA-74-5313 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
LAMINAR AND TURBULENT VISCOUS SHOCK LAYER FLOW IN THE SYMMETRY PLANES OF BODIES AT ANGLE OF ATTACK.
R. R. Eaton, and D. E. Larson. 1973, 11p CONF-740616-2

Descriptors: Finite difference method, Laminar flow, Navier-stokes equation, Reynolds number, Turbulent flow.

For abstract, see NSA 30 04, number 12195.

20E. Masers and Lasers

AD-783 514/3GA PC$3.75/MF$2.25
Naval Research Lab Washington D C
OPTICAL ISOLATION AND THE DESIGN OF LARGE APERTURE, HIGH EXTINCTION RATIO FARADAY ROTATORS FOR HIGH POWER GLASS LASERS.
Final rept.,
O. C. Barr. Jun 74, 68p Rept no. NRL-MR-2817

Descriptors: *Neodymium lasers, *Infrared equipment, Performance(Engineering), Engineering drawings, Isolation, Faraday effect, Optical glass, Lasers.
Identifiers: *Glass lasers, *Faraday rotators, Design.

A simple, high performance, low cost Faraday rotator of 8 cm aperture and 36 dB isolation has been designed and constructed. Two of these rotators have been incorporated into the high power glass laser at the U.S. Naval Research Laboratory (NRL). Design considerations, construction details, and system integration aspects are discussed. (Author)

AD-783 612/5GA PC$4.50/MF$2.25
Kollsman Instrument Corp Syosset N Y
VARIABLE FIELD OFF-AXIS COHERENT SYSTEM (VOAC).
Final rept.,
R. Gelles, and T. Stearns. Jun 74, 118p RADC-TR-74-156
Contract F30602-73-C-0308

Descriptors: *Optical radar, *Infrared optical systems, Laser beams, Zoom lenses, Optical equipment, Infrared lasers, Telescopes, Tilt, Carbon dioxide lasers.
Identifiers: Tilted element telescopes.

The report summarizes the investigation and design of an unobstructed one meter aperture diffraction limited off-axis optical system. The system is capable of duplexed transmitter and receiver operations. The transmitter optics is capable of handling power levels approaching 50 Kw at 10.6 micrometers while providing variable field coverage with a continuous zoom range of 10 to 1. The receiver is operational in the visible and 10.6 micrometers and can support both acquisition and fine resolution tracking operations for an active laser illuminating system which employs a tracking beam director. (Author)

AD-783 669/5GA PC$11.00/MF$2.25
Naval Postgraduate School Monterey Calif
A TECHNOLOGICAL FORECAST FOR GALLIUM ARSENIDE LASERS.
Master's thesis,
Harold Muschott Olson. Jun 74, 160p

Descriptors: *Gallium arsenide lasers, History, Performance(Engineering), Scientific research, Patents, Injection lasers, Technology, Forecasting, Theses, Power, Costs, Efficiency.
Identifiers: *Technological forecasting, Development, Trends.

A technological forecast for GaAs injection lasers operating at room temperature is made. It indicates significant technological progress followed by widespread use for optical waveguide communications in the early 1980's. Extrapolated values for power, efficiency, lifetime, threshold current, and cost per watt are tabulated for the years 1976 and 1980. Two trend extrapolation techniques based on the different assumptions that technological progress advances exponentially with time and that technological progress advances exponentially with cumulative production are compared. The technological progress function which uses patent output as a measure of cumulative production is determined to be the best measure in the case of the injection laser. (Author)

AD-783 671/1GA PC$3.25/MF$2.25
Naval Research Lab Washington D C
DESIGN OF FANNED AND WEDGED STACKED PLATE POLARIZERS FOR HIGH POWER LASERS.
Final rept.,
Orville C. Barr, and John M. McMahon. Jul 74, 38p Rept no. NRL-MR-2830

Descriptors: *Optical equipment components, *Neodymium lasers, Polarization, High power, Optical glass, Plates.
Identifiers: *Polarizers.

A large aperture, low loss, high damage threshold polarizer design has been developed to meet the requirements arising in isolation of large glass laser systems. The design differs from traditional designs to achieve desired rejection ratios with fewer plates and lower transmission losses. Polarizers of this design have been fabricated, tested and installed in the high power glass laser at the Naval Research Laboratory. (Author)

AD-783 706/5GA PC$3.00/MF$2.25
United Aircraft Research Labs East Hartford Conn
RESEARCH ON HCL CHEMICAL LASER.
Letter rept. 15 Apr-15 Jul 74,
R. J. Hall, R. A. Meinzer, and R. V. Steele. 25 Jul 74, 5p
Contract N00014-74-C-0377

Descriptors: *Chemical lasers, *Chain reactions, Computer programming, Energy transfer, Hydrogen chloride, Reaction kinetics, Gas flow, Scientific research, Hydrogen fluoride, Emission spectra, Chemiluminescence.
Identifiers: *Hydrogen chloride lasers, Chemical reaction mechanisms.

Research efforts and results are summarized for an investigation whose objectives are to characterize the reaction mechanism of the cw combustion-driven chain-reaction HCl laser, select an optimum set of operating conditions, demonstrate the magnitude of the specific power which can be experimentally achieved, and predict the performance potential of the HCl laser at high cavity static pressures. These objectives are being pursued by making analytical calculations and experimental measurements. A computer program, CHEMIX, is being used to model the performance of the chain-reaction laser and the validity of these computations is being investigated by making comparisons with the results of chemiluminescent emission spectroscopy and optical power measurements.

AD-783 711/5GA PC$4.25/MF$2.25
Maryland Univ College Park Dept of Electrical Engineering
INVESTIGATION OF THE LONG TERM FREQUENCY STABILITY OF STABLE LASER STRUCTURES.
Final rept.,
U. E. Hochuli, P. Haldemann, and H. A. Li. Aug 74, 23p
Contract N00014-67-A-0239-0016
See also AD-749 056.

Descriptors: *Laser materials, Gas lasers, Impurities, Drift, Dielectric properties, Mirrors, Aging(Materials), Computerized simulation, Frequency, Stability.
Identifiers: *Helium neon lasers, *Frequency stability.

6328A He-Ne laser structures, made from ultra low expansion materials, suspended in temperature and pressure controlled chambers, have shown drift rates in excess of +5 MHz per day. The same structure, evacuated and used as passive Fabry Perot resonators, suspended in the previous now evacuated chambers, still show a drift rate of the order of +2 MHz per day. Computer simulated mirror model ageing shows that relatively large changes of the dielectric constants of the mirror coatings are needed to explain the measured drift. The authors propose that the dimensional stability of the materials, the properties of the optical contacts used as well as the behavior of the dielectric mirrors should be more carefully investigated. (Modified author abstract)

AD-783 842/8GA PC$4.50/MF$2.25
Texas Instruments Inc Dallas Central Research Labs
ND-DOPED MIXED CRYSTAL LASER MATERIAL RESEARCH.
Final rept. 1 Jul 72-31 Mar 74,
W. C. Holton, D. W. Bellavance, F. J. Bruni, M. deWit, and R. K. Watts. Jul 74, 106p AFML-TR-74-126
Contract F33615-72-C-1977, ARPA Order-2072

Descriptors: *Neodymium lasers, *Laser materials, Yttrium compounds, Aluminum compounds, Gallium compounds, Garnet, Crystal growth, Electron paramagnetic resonance.
Identifiers: Yttrium aluminum garnet, Yttrium gallium garnet.

The mixed crystal system Y3(Al(x)Ga(1-x)5O12 was investigated at a laser host material for Nd(3+). Spectroscopic studies established that at the optimum composition a reduction by a factor of 3 in gain, as compared with YAlG (Y3Al5O12), is possible, and implying increased output energy in Q-switched operation. Mechanical and thermal properties were found to be similar to those of YAlG. Laser rods were fabricated from boules of the material, examined for optical quality, and tested under Q-switched conditions. It is concluded that although the mixed crystal material has potential advantages, it is not possible to realize this potential because of the difficulty of growing crystals of high optical quality. (Modified author abstract)

AD-783 852/7GA PC$4.75/MF$2.25
Dayton Univ Ohio Research Inst
THE AIR FORCE WEAPONS LABORATORY LASER WINDOW TEST APPARATUS.
Final rept. Jun 72-Jun 73,
P. W. Dueweke, D. D. Preonas, and D. G. Peterson, Jr. Jun 74, 144p AFWL-TR-7_ .81
Contract F29601-72-C-0122

Descriptors: *Laser materials, *Infrared optical materials, *Infrared windows, *Test equipment, Gas lasers, Carbon dioxide lasers, Infrared lasers, Optical properties, Interferometers, Photometers, Transmittance, Reflectance, Calibration, Minicomputers, Computer programs, Rasters, Data processing.

The Laser Window Test Apparatus (LWTA) evaluates windows and other optical components for high-power infrared laser systems. Specimens are probed with narrow beams from low-power lasers (currently CO2 lasers) to determine their optical characteristics at incidence angles between 2 and 76 degrees from the normal. The instrument includes a photometer that uses digitized ratiometric detection for measuring single-pass transmittance and single-pass reflectance; an interferometer for measuring the optical pathlength through specimens; a rastering machine for moving the specimens in relation to the probing beams; and a minicomputer controls measurements, performs on-line calibrations, computes running statistical records of the acquired data, and generates an output tape of all data for use by a CDC-6600 computer program which generates the data in its final form and accuracy. (Modified author abstract)

AD-783 864/2GA PC$7.00/MF$2.25
Naval Postgraduate School Monterey Calif
ANALYTICAL INVESTIGATION OF TRANSIENT DIFFUSER WAVE PHENOMENA.
Master's thesis,
Kenneth Dean Aanerud. Jun 74, 76p

Descriptors: *Gas dynamic lasers, *Supersonic flow, *Computer programs, One dimensional flow, Axial flow compressors, Aircraft, Airborne, Nozzle gas flow, Theses.

A computer program was developed to solve the quasi-one-dimensional, unsteady flow problem associated with starting phenomena in various nozzle-short diffuser combinations of interest to gas dynamic lasers. The program was based on the techniques developed by George Rudinger in his book, Wave Diagrams for Nonsteady Flow in Ducts. The techniques were modified to facilitate a fixed grid for computational ease. The program was used to analyze the starting transients of a Mach 3 nozzle with a semi-wedge diffuser. Results indicated that for a given inlet/exhaust pressure ratio, diffuser starts could be obtained at higher ramp angles for thin diffusers than for thick diffusers. (Author)

HDL-TDR-1621 REFER TO AL GAUDREAU/MF$2.25
Harry Diamond Labs., Washington, D.C.
STUDIES RELATIVE TO POSSIBLE LASER PUMPED BY NUCLEAR BETA RAYS. I. OPTICAL SPECTRA OF LITMF SUB 4 DOPED WITH A RARE EARTH ION.
C. A. Morrison, and D. C. Wortman. Oct 73, 32p

Descriptors: (*Lasers, *Excitation), Beta particles, Crystals, Fluorine, Lithium, Spectra, Thulium.

For abstract, see NSA 30 05, number 12636.

NP-20013 PC$7.00/MF$2.25
Institutul de Fizica Atomica, Bucharest (Romania).
PHYSICS OF LASERS (NO. II: ELEMENTS OF THERMODYNAMICS AND STATISTICAL PHYSICS).
N. Ionescu-Pallas. 1973, 76p
In Rumanian. U.S. Sales Only.

Descriptors: (*Lasers, *Statistical mechanics), Kinetic equations, Thermodynamics.

For abstract, see NSA 30 04, number 09424.

RISO-M-1713 PC$4.00/MF$2.25
Danish Atomic Energy Commission, Risoe. Research Establishment.
A NOTE ON THE MEANING OF "COHERENT" AND "INCOHERENT" WITH RESPECT TO A LASER DOPPLER VELOCIMETER.
L. Lading, and S. Hanson. Apr 74, 8p
U.S. Sales Only.

Descriptors: (*Laser radiation, *Doppler effect), Coherent scattering, Incoherent scattering, Velocity.

For abstract, see NSA 30 04, number 12187.

UCID-16499 PC$4.25/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
LASER DISC COMPUTER SIMULATION.
J. B. Sonderman, and A. T. Glassman. 14 May 74, 21p
Contract W-7405-eng-48

Descriptors: (*Lasers, *Simulators), Computers, Laser radiation, Lenses.

For abstract, see NSA 30 04, number 09427.

UCRL-75476 PC$5.25/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
NEW RARE EARTH QUANTUM ELECTRONIC DEVICES: A CALCULATIONAL APPROACH.
W. F. Krupke. Apr 74, 43p CONF-740404-2

Descriptors: (*Lasers, *Rare earths), Mathematical models, Population inversion.

For abstract, see NSA 30 04, number 09428.

20F. Optics

AD-783 478/1GA PC$3.25/MF$2.25
Ballistic Research Labs Aberdeen Proving Ground Md
AN ANALYSIS OF MATHEMATICAL TRANSFORMATIONS AND A COMPARISON OF NUMERICAL TECHNIQUES FOR COMPUTATION OF HIGH-ENERGY CW LASER PROPAGATION IN AN INHOMOGENEOUS MEDIUM.
Final rept.,
Harold J. Breaux. Jun 74, 49p Rept no. BRL-1743

Descriptors: *Laser beams, Wave propagation, Hydrodynamics, Fourier transformation, Transformations(Mathematics), Coherent radiation, Computations, Computer programs, FORTRAN.
Identifiers: Fast Fourier transform, FORTRAN 4 programming language, Atmospheric attenuation.

Present methods for modeling the propagation of focused and collimated laser beams are examined. Methods used for transforming the paraxial equation into a form more suitable for computation are generalized. This generalization is shown to lead to more beneficial computational characteristics than transformations previously employed. Various strategies arising from these transformations are analyzed and compared for numerical efficiency. The transformed equations are shown to be a convenient point of departure for solution by a class of numerical methods. The formulation is shown to lead to a Fast Fourier Transform (FFT) solution that does not require a Nyquist accuracy criterion, allowing the numerical procedure to march the solution forward in a more economical fashion. (Modified author abstract)

AD-783 484/9GA PC$3.25/MF$2.25
Ballistic Research Labs Aberdeen Proving Ground Md
LIGHT REFRACTION BY MEAN TEMPERATURE GRADIENTS IN THE NEAR-EARTH ATMOSPHERE.
Final rept.,
Marvin L. Wesely, and Charles R. Stearns. Jun 74, 42p Rept no. BRL-MR-2386

Descriptors: *Laser beams, *Refractive index, Coherent radiation, Ray tracing, Curve fitting, Distortion, Computations, Computer programs.
Identifiers: *Atmospheric attenuation, Atmospheric boundary layer.

Visible light ray paths in the atmospheric surface layer are numerically computed by division of 500- to 5000-m ranges into small intervals so that the ray path height and thus the refractive index gradient is nearly constant for each step. Meteorological conditions are varied by using different combinations of sensible heat fluxes, surface stresses, and surface roughness. Although the effect of water vapor gradients can be substantial, their effect is not included here. The results are confined to heights less than five m because of the restrictive values chosen for the ratio of the eddy diffusivity of heat to that of momentum. Mirages hide lower portions of images and the minimum observable height varies approximately in inverse proportion to the observer height. (Modified author abstract)

AD-783 534/1GA PC$3.25/MF$2.25
IBM Thomas J Watson Research Center Yorktown Heights N Y
MAGNETO-OPTIC EFFECTS AT 1.15 MICROMETER IN GD(0.5)Y(2.5)GA IRON GARNET THIN FILM WAVEGUIDES.
Quarterly technical rept. no. 5, 1 Jan-31 Mar 74,
A. R. Reisinger, C. G. Powell, and S. C. Tseng. Jul 74, 31p
Contract N00014-73-C-0256, ARPA Order-2327
See also AD-780 703.

Descriptors: *Magnetooptics, Infrared radiation, Thin films, Frequency response, Waveguides, Gadolinium compounds, Yttrium iron garnet, Gallium compounds, Magnetic fields, Modulation.
Identifiers: *Optical waveguides, Magnetic films.

The authors report on the frequency response of the mode conversion process in their magnetooptic thin film waveguides. Experiments were carried out (a) by application of a magnetic field step pulse and (b) by rf excitation. The dynamical behavior of the magnetization was monitored simultaneously by optical detection and electromagnetic sensing. It was determined that the magnetic field required for switching increases with frequency. The implications of this property are discussed in terms of driving circuit design. (Modified author abstract)

AD-783 691/9GA PC$3.00/MF$2.25
Naval Electronics Lab Center San Diego Calif
THE EFFECTS OF CONTAMINANTS ON FIBER OPTIC CONNECTOR RADIATION PATTERNS.
Technical document,
G. Kosmos. 25 Jul 74, 19p Rept no. NELC-TD-349

Descriptors: *Fiber optics, Connectors, Fiber optics transmission lines, Contaminants, Radiation, Intensity, Light transmission, Patterns.

The study of how liquid contaminants affect transmission within fiber connectors in installing fiber optic systems has shown that fiber optic connectors which are contaminated by oils and grease generally enhance light transmissions, thus eliminating one of the objections to fiber optic communications. It was found that some of the contaminants that attenuate transmission are opaque and that they can be removed from the connector during normal maintenance. (Author)

AD-783 807/1GA PC$6.50/MF$2.25
Naval Postgraduate School Monterey Calif
AN EXPERIMENT TO MEASURE THE MODULATION TRANSFER FUNCTION OF THE ATMOSPHERE IN THE MARINE BOUNDARY LAYER.
Master's thesis,
Marion Romaine Alexander, Jr. Jun 74, 66p

Descriptors: *Laser beams, Laser communications, Carbon dioxide lasers, Fourier transformation, Computer programs, Transfer functions, Attenuation, Theses.
Identifiers: Modulation transfer functions, Atmospheric boundary layer, Monterey Bay, *Atmospheric attenuation, Helium neon lasers, Fast Fourier transform, MODFUN computer program, AVSPEC computer program, AVWAVE computer program.

A system to measure the modulation transfer function (MTF) of the atmosphere over the ocean has been designed, constructed, and tested. The apparatus employs a high resolution scanning telescope with the capability for use in a broad range of visual and infrared wavelengths. Two successful trials were conducted with a gyro-stabilized 6328 A laser mounted on board the R. V. ACANIA. The propagation path was approximately one km over open water from the ACANIA to Point Pinos. Two more successful trials were conducted with a 6328 A laser and a 10.6 micrometer laser propagating simultaneously from shore to shore across 4 km of the southern end of Monterey Bay. Data was processed using fast Fourier transform methods. The MTF of the atmosphere for 6328 A light was measured. (Author)

AD-783 820/4GA MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
COMMUTABLE FUNCTIONAL DEVICES OF THE 'SCANISTOR' TYPE IN SYSTEMS OF OPTOELECTRONIC INFORMATION PROCESSING,
K. F. Berkovskaya, and B. G. Podplaskin. 12 Apr 74, 27p Rept no. FSTC-HT-23-466-74
Trans. of Mikroelektronika (USSR) v5 n1 p48-65 1972.
Availability: Available in microfiche only.

Descriptors: *Electrooptics, Data processing equipment, Information processing, Image converters, Signal generators, Light emitting diodes, Photodiodes, Translations, USSR.
Identifiers: Function generators.

The status of multielement optrons among optical data processing systems is described. One possible variant of an 'active' optron is presented, based on solid-state matrices or panels with distributed parameters, of the emitting and photosensing types. The precision of analog-to-discrete conversion with a scanistor will depend mainly on the number of elementary cells N.

Y-DA-5789 PC$4.00/MF$2.25
Oak Ridge Y-12 Plant, Tenn.
APPLICATION OF ELECTROPLATING TO THE FABRICATION OF OPTICS.
F. B. Waldrop, R. C. Waldrop, M. J. Bezik, and W. E. Tewes. 7p
Contract W-7405-eng-26

Descriptors: (*Silver, *Optical properties), (*Gold, Optical properties), (*Copper, Optical properties), (*Aluminium, Optical properties), Beryllium, Defects, Electric conductivity, Electrodeposited coatings, Electroplating, Fabrication, Machining, Substrates, Surface coating, Thermal conductivity, Voids.

For abstract, see NSA 30 04, number 12168.

20G. Particle Accelerators

BUP-64 PC$4.25/MF$2.25
Bergen Univ. (Norway). Dept. of Physics.
CALCULATIONS AND MEASUREMENTS OF THE BEAM TRANSPORT AT THE NIELS BOHR INSTITUTE'S TANDEM LABORATORY.
G. E. Sandvik. Apr 74, 25p
In Norwegian. U.S. Sales Only.

Descriptors: (*Van de graaff accelerators, *Beam optics), Beam emittance, Beam monitoring, Beam profiles, Beam transport, Focusing, Quadrupoles.

For abstract, see NSA 30 05, number 13322.

CERN-74-11 PC$6.50/MF$2.25
European Organization for Nuclear Research, Geneva (Switzerland).
DYNAMIC ORIENTATION OF NUCLEI AT LOW TEMPERATURES. A STUDY OF THE MECHANISMS OF DYNAMIC POLARIZATION IN POLARIZED TARGETS.
W. de Boer. 13 May 74, 67p
U.S. Sales Only.

Descriptors: (*Glycols, *Polarized nuclei), Carbon 13, Deuterons, Magnetic fields, Polarization, Polarized targets, Protons, Spin orientation, Ultralow temperature.

For abstract, see NSA 30 04, number 10561.

CERN-74-13 PC$5.00/MF$2.25
European Organization for Nuclear Research, Geneva (Switzerland).
DIPOLE SEPTUM MAGNETS.
R. L. Keizer. 21 May 74, 36p
U.S. Sales Only.

Descriptors: (*Accelerators, *Beam extraction), (*Synchrotrons, Beam extraction), Beam optics, Dipoles, Electromagnets, Errors, Magnetic fields.

For abstract, see NSA 30 04, number 10535.

CONF-740522-11 PC$4.00/MF$2.25
Argonne National Lab., Ill.

PHASOR: A CONTROL COMPUTER METHOD FOR DISPLAYING AMPLITUDE AND PHASE OF RIPPLE COMPONENTS IN THE RING MAGNET VOLTAGE.
L. G. Lewis, and A. D. Valente. 6p

Descriptors: (*Zgs, *Control systems), Calibration, Electromagnets, Operation, Power supplies.

For abstract, see NSA 30 04, number 10522.

CONF-740522-13 PC$4.00/MF$2.25
Argonne National Lab., Ill.
HIGH ENERGY POLARIZED BEAM AT THE ZGS.
T. K. Khoe, R. L. Kustom, R. L. Martin, E. F. Parker, and C. W. Potts. 8p

Descriptors: (*Zgs, Polarized beams), (*Polarized beams, *Acceleration), Polarimeters, Proton beams, Proton sources, Spin orientation.

For abstract, see NSA 30 04, number 10505.

CONF-740522-14 PC$4.00/MF$2.25
National Accelerator Lab., Batavia, Ill.
EXTRACTION FOR THE MAIN RING AT NAL.
R. A. Andrews, H. T. Edwards, H. E. Fisk, F. Hornstra, and J. D. McCarthy. May 74, 6p
Contract AT(49-8)-3000

Descriptors: (*Nal synchrotron, *Beam extraction), Efficiency, Feedback.

For abstract, see NSA 30 04, number 10536.

CONF-740522-15 PC$4.50/MF$2.25
Argonne National Lab., Ill.
DEVELOPMENT OF THE SUPERCONDUCTING HELIX FOR HEAVY-ION ACCELERATION.
J. Aron, R. Benaroya, L. M. Bollinger, B. E. Clifft, and O. Despe. 1974, 6p

Descriptors: (*Helical waveguides, *Superconductors), (*Linear accelerators, Helical waveguides), Cavity resonators, Electric fields, Fabrication, Heavy ions.

For abstract, see NSA 30 04, number 10523.

CONF-740522-18 PC$4.00/MF$2.25
National Accelerator Lab., Batavia, Ill.
PROGRESS REPORT ON THE NAL ENERGY DOUBLER DESIGN STUDY.
D. A. Edwards, W. B. Fowler, P. J. Reardon, D. E. Richied, and B. P. Strauss. May 74, 7p
Contract AT(49-8)-3000

Descriptors: (*Nal synchrotron, *Planning), Design, Superconducting magnets.

For abstract, see NSA 30 04, number 10506.

CONF-740522-19 PC$4.00/MF$2.25
National Accelerator Lab., Batavia, Ill.
BEAM EXTRACTION.
H. T. Edwards. May 74, 4p
Contract AT(49-8)-3000

Descriptors: (*Synchrotrons, *Beam extraction), Efficiency, Reviews.

For abstract, see NSA 30 04, number 10537.

CONF-740522-20 PC$4.00/MF$2.25
National Accelerator Lab., Batavia, Ill.
INSERTIONS FOR COLLIDING-BEAM STORAGE RINGS.
W. W. Lee, and L. C. Teng. May 74, 5p
Contract AT(49-8)-3000

Descriptors: (*Storage rings, *Colliding beams), Beam optics, Proton beams.

For abstract, see NSA 30 04, number 10559.

CONF-740522-21 PC$4.00/MF$2.25
National Accelerator Lab., Batavia, Ill.
NAL ACCELERATOR AND FUTURE PLANS.
May 74, 12p
Contract AT(49-8)-3000

Descriptors: (*Nal synchrotron, *Operation), Accelerator facilities, Performance, Planning.

For abstract, see NSA 30 04, number 10507.

CONF-740522-22 PC$4.00/MF$2.25
National Accelerator Lab., Batavia, Ill.
TWO-DIMENSIONAL RESONANCE EFFECTS DUE TO A LOCALIZED BI-GAUSSIAN CHARGE DISTRIBUTION.
A. G. Ruggiero. May 74, 6p
Contract AT(49-8)-3000

Descriptors: (*Colliding beams, *Beam dynamics), (*Storage rings, Colliding beams), Equations of motion, Resonance, Two-dimensional calculations.

For abstract, see NSA 30 05, number 13325.

CONF-740522-23 PC$4.00/MF$2.25
National Accelerator Lab., Batavia, Ill.
TRANSVERSE SINGLE PARTICLE INSTABILITY IN THE NAL 500-GEV ACCELERATOR.
R. Stiening, and E. J. N. Wilson. May 74, 5p
Contract AT(49-8)-3000

Descriptors: (*Nal synchrotron, *Beam dynamics), Beam acceptance, Errors, Magnetic fields, Resonance, Tuning.

For abstract, see NSA 30 04, number 10541.

CONF-740522-24 PC$4.00/MF$2.25
National Accelerator Lab., Batavia, Ill.
TRANSVERSE COLLECTIVE INSTABILITY IN THE NAL 500-GEV ACCELERATOR.
R. Stiening, and E. J. N. Wilson. May 74, 3p
Contract AT(49-8)-3000

Descriptors: (*Nal synchrotron, *Beam dynamics), Control, Damping, Feedback, Instability.

For abstract, see NSA 30 04, number 10542.

COO-1112-249 PC$4.00/MF$2.25
Michigan Univ., Ann Arbor Dept. of Physics.
NEW CRYOSTAT FOR PPT V.
S. W. Gray. 4p CONF-740226-2

Descriptors: (*Polarized targets, Cryostats), (*Cryostats, *Design), Helium 3, Helium 4.

For abstract, see NSA 30 05, number 13342.

COO-1195-287 PC$4.00/MF$2.25
Illinois Univ., Urbana Dept. of Physics.
REPORT OF THE LARGE-DETECTOR GROUP.
1973, 19p CONF-730740-1

Descriptors: (*Nal synchrotron, *Accelerator facilities), (*Multiparticle spectrometers, *Planning), Cherenkov counters, Magnetic spectrometers, Multiwire proportional chambers, Superconducting magnets.

For abstract, see NSA 30 04, number 10562.

EUR-5112 PC$4.50/MF$2.25
Commission of the European Communities, Ispra (Italy). Joint Nuclear Research Center.
DIGITAL SYSTEM FOR SPEED AND PHASE CONTROL OF PHASED NEUTRON CHOPPER ARRAYS.
E. Bettendroffer, and J. Eder. 1974, 28p
U.S. Sales Only.

Descriptors: (*Neutron choppers, *Control systems), Digital circuits, Digital systems, Pulse generators, Slow neutrons.

For abstract, see NSA 30 05, number 12811.

GEPP-130 PC$4.00/MF$2.25
General Electric Co., St. Petersburg, Fla. Neutron Devices Dept.
STRESSES ON ENCAPSULATED GLASS VACUUM TUBE AND HEADER.
R. K. Spears, and V. Lusis. 18 Jun 74, 16p
Contract AT(29-2)-656

Descriptors: (*Neutron sources, *Fabrication), Epoxides, Glass, Resins, Stress analysis.

For abstract, see NSA 30 04, number 10563.

JINR-P16-7834 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR).
CONCRETE SHIELDING OF THE ELECTRON ACCELERATORS WITH ENERGIES 0.5 TO 10 MEV.
V. I. Tsovbun. 1974, 12p
In Russian. U.S. Sales Only.

Descriptors: (*Accelerators, *Shielding), Bremsstrahlung, Concretes, Electron beams, Kev range 100-1000, Mev range 01-10.

For abstract, see NSA 30 04, number 10530.

JINR-P9-7631 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of High Energy.
PROBLEM OF MAGNETIC FIELD FORCING IN THE TWO-STAGE REGIME OF NUCLEUS ACCELERATION WITH THE JINR SYNCHROPHASOTRON.
G. S. Kazanskii, A. I. Mikhailov, and A. A. Smirnov. 1973, 18p
In Russian. U.S. Sales Only.

Descriptors: (*Jinr synchrotron, *Operation), (*Heavy ions, *Acceleration), Magnetic fields.

For abstract, see NSA 30 04, number 10548.

KEK-73-1 PC$4.00/MF$2.25
National Lab. for High Energy Physics, Oho, Ibaraki (Japan).
EDDY CURRENT EFFECTS IN THE BORE TUBES OF LINAC FOCUSING MAGNETS.
M. Kobayashi, J. Tanaka, and S. Yamashita. Jan 73, 20p
U.S. Sales Only.

Descriptors: (*Linear accelerators, Beam focusing magnets), (*Beam focusing magnets, *Eddy currents), Drift tubes, Magnet pole pieces, Magnetic fields, Quadrupoles.

For abstract, see NSA 30 04, number 10549.

KEK-73-2 PC$6.00/MF$2.25
National Lab. for High Energy Physics, Oho, Ibaraki (Japan).
RESONANT NETWORK FOR THE KEK BOOSTER SYNCHROTRON MAGNET.
H. Sasaki, K. Takikawa, and M. Kumada. Feb 73, 56p
U.S. Sales Only.

Descriptors: (*Synchrotrons, Electromagnets), (*Electromagnets, *Electronic circuits), Coupling, Magnet coils, Particle boosters, Power supplies, Specifications.

For abstract, see NSA 30 04, number 10531.

KEK-73-4 PC$5.25/MF$2.25
National Lab. for High Energy Physics, Oho, Ibaraki (Japan).

DESIGN OF THE FOCUSING SYSTEM FOR KEK LINEAR ACCELERATOR.
M. Kobayashi. Oct 73, 42p
U.S. Sales Only.

Descriptors: (*Linear accelerators, *Beam optics), Alignment, Beam acceptance, Beam emittance, Design, Electromagnets, Focusing, Tolerances.

For abstract, see NSA 30 04, number 10550.

KEK-73-7 PC$4.00/MF$2.25
National Lab. for High Energy Physics, Oho, Ibaraki (Japan).
COHERENT INSTABILITY DUE TO IONS IN THE RESIDUAL GAS.
T. K. Khoe. Nov 73, 15p
U.S. Sales Only.

Descriptors: (*Synchrotrons, *Beam injection), Beam dynamics, Instability, Landau damping.

For abstract, see NSA 30 04, number 10551.

KEK-73-8 PC$4.25/MF$2.25
ACCELERATION OF POLARIZED PROTONS IN THE KEK SYNCHROTRON.
T. K. Khoe. Nov 73, 23p
U.S. Sales Only.

Descriptors: (*Proton beams, *Depolarization), (*Synchrotrons, *Polarized beams).

For abstract, see NSA 30 04, number 10552.

KFK-EXT-3-74-3 PC$4.25/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Experimentelle Kernphysik.
MECHANICAL EXCITATION OF SUPERCONDUCTING HELIX RESONATORS BY EXTERNAL SOURCES WITH SLOWLY CHANGING FREQUENCY.
D. Schulze, and A. Hornung. Feb 74, 25p
In German. U.S. Sales Only.

Descriptors: (*Helical waveguides, *Operation), (*Linear accelerators, Helical waveguides), Cavity resonators, Damping, Heavy ions, Protons, Superconductors.

For abstract, see NSA 30 04, number 10532.

LA-UR-74-847 PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
SIMULTANEOUS STEERING OF H EXP + AND H EXP - BEAMS AT LAMPF.
K. R. Crandall, and W. E. Jule. 2p CONF-740522-17

Descriptors: (*Lampf linac, *Beam optics), Electromagnetic lenses, Hydrogen ions 1 minus, Protons, Quadrupoles.

For abstract, see NSA 30 04, number 10553.

LA-5535-C PC$10.60/MF$2.25
Los Alamos Scientific Lab., N.Mex.
PROCEEDINGS OF THE SYMPOSIUM ON PRACTICAL APPLICATIONS OF ACCELERATORS, CLINTON P. ANDERSON MESON PHYSICS FACILITY, AUGUST 27--31, 1973.
M. E. Schillaci, and K. H. Harper. Mar 74, 417p CONF-730849-
Contract W-7405-eng-36

Descriptors: (*Accelerators, *Meetings), Lasl, Leading abstract, Research programs, Uses.

For abstract, see NSA 30 04, number 10514.

LBL-2603 PC$4.00/MF$2.25
California Univ., Berkeley Lawrence Berkeley Lab.
EXPERIMENTAL SUPERCONDUCTING ACCELERATOR RING (ESCAR).
R. Avery, T. Elioff, and A. Garren. May 74, 6p CONF-740522-25
Contract W-7405-eng-48

Descriptors: (*Synchrotrons, *Superconducting magnets), (*Storage rings, Superconducting magnets), Planning, Proton beams.

For abstract, see NSA 30 05, number 13313.

LBL-2688 PC$5.45/MF$2.25
California Univ., Berkeley Lawrence Berkeley Lab.; Stanford Linear Accelerator Center, Calif.
PROPOSAL FOR A POSITRON-ELECTRON COLLIDING-BEAM STORAGE RING PROJECT (PEP).
Apr 74, 149p SLAC-171
Contract W-7405-eng-48

Descriptors: (*Pep storage rings, *Planning), Colliding beams, Construction, Cost, Design.

For abstract, see NSA 30 04, number 10560.

NP-20054 PC$4.00/MF$2.25
Rome Univ. (Italy). Istituto di Fisica; Istituto Nazionale di Fisica Nucleare, Rome (Italy).
PROFILE AND CONTAMINATION OF AN ELECTRON BEAM.
G. Romano. 25 Mar 74, 8p
U.S. Sales Only.

Descriptors: (*Frascati synchrotron, *Beam monitoring), (*Beam monitors, *Dielectric track detectors), Beam profiles, Electron beams, Nitrocellulose.

For abstract, see NSA 30 05, number 13316.

PTB-ND-5 PC$4.75/MF$2.25
Physikalisch-Technische Bundesanstalt, Braunschweig (F.R. Germany).
PROPOSAL FOR A GAS TARGET FOR NEUTRON PRODUCTION.
M. K. Leung. Dec 73, 31p
U.S. Sales Only.

Descriptors: (*Neutron sources, Targets), (*Targets, Tritium), (*Tritium, Targets), Fast neutrons, Gases, Planning, Proton reactions.

For abstract, see NSA 30 04, number 10572.

RL-74-25 PC$4.50/MF$2.25
Science Research Council, Chilton (UK). Rutherford Lab.
VACUUM REQUIREMENTS FOR THE PROTON RING OF EPIC.
1973, 30p
U.S. Sales Only.

Descriptors: (*Storage rings, *Vacuum systems), Accelerators, Collisions, Energy losses, Gases, Ionization, Pressure dependence, Proton beams, Scattering.

For abstract, see NSA 30 05, number 13340.

RL-74-26 PC$4.00/MF$2.25
Science Research Council, Chilton (UK). Rutherford Lab.
EDDY CURRENTS IN THE VACUUM CHAMBER OF THE EPIC ELECTRON RING.
J. R. J. Bennett. Jan 74, 3p
U.S. Sales Only.

Descriptors: (*Storage rings, *Vacuum systems), Accelerators, Aluminium, Containers, Disturbances, Eddy currents, Electron beams, Magnetic fields, Stainless steels, Thickness.

For abstract, see NSA 30 05, number 13341.

RL-74-48 PC$4.25/MF$2.25
Science Research Council, Chilton (UK). Rutherford Lab.
PROTON DUOPLASMATRON ION SOURCE FOR THE PREINJECTOR OF THE NEW INJECTOR FOR NIMROD.
R. G. Fowler, R. Sidlow, G. Soulby, and N. D. West. Mar 74, 24p
U.S. Sales Only.

Descriptors: (*Duoplasmatrons, *Beam optics), (*Nimrod, *Proton sources), Beam emittance, Beam extraction, Beam injection, Milli amp beam currents, Particle boosters, Proton beams.

For abstract, see NSA 30 04, number 10540.

UCRL-Trans-1514 PC$4.00/MF$2.25
Gosudarstvennyj Komitet po Ispol'zovaniyu Atomnoj Ehnergii SSSR, Moscow. Inst. Teoreticheskoj i Ehksperimental'noj Fiziki.
DISTRIBUTION FUNCTION OF IONS FORMED IN AN ELECTRON RING.
A. A. Drozdovskii. 1973, 16p
Translation by G. Brodell of ITEF--10.

Descriptors: (*Electron-ring accelerators, *Beam dynamics), Beam injection, Distribution functions, Ions.

For abstract, see NSA 30 04, number 10554.

UCRL-75337 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
ELECTRON AUTOACCELERATION.
R. J. Briggs, T. J. Fessenden, and V. K. Neil. Apr 74, 6p CONF-740522-16

Descriptors: Accelerators, Electromagnetic fields, Electron beams, Mev range 01-10, Operation.

For abstract, see NSA 30 04, number 10516.

20H. Particle Physics

AAEC/E-304 PC$4.00/MF$2.25
Australian Atomic Energy Commission Research Establishment, Lucas Heights.
INVESTIGATION OF THE ENERGETICS OF BINARY AND TERNARY FISSION IN EXP 252 CF AND EXP 236 U.
A. R. deL. Musgrove. Mar 74, 15p
U.S. Sales Only.

Descriptors: (*Californium 252, *Spontaneous fission), (*Uranium 236, Spontaneous fission), Alpha particles, Alpha particles, Data, Electric charges, Excitation, Fission fragments, Kinetic energy, Mev range 10-100, Neutrons, Nuclear deformation, Nuclear models, Ternary fission.

For abstract, see NSA 30 04, number 11577.

AD-783 774/3GA PC$3.00/MF$2.25
Air Force Cambridge Research Labs L G Hanscom Field Mass
POSITRONIUM: A REVIEW OF THE CALCULATIONS.
Environmental research papers,
Michael A. Stroscio. 3 Jun 74, 33p* Rept nos. AFCRL-TR-74-0248, AFCRL-ERP-476

Descriptors: *Positronium, *Reviews, Magnetosphere, Decay schemes, Annihilation reactions, Positrons, Energy levels.
Identifiers: Quantum electrodynamics.

For typical magnetospheric densities, free positrons have a lifetime of between one million and one trillion seconds. A portion of the injected positrons undergo free annihilation and a portion form positronium. Results are given of the theoretical calculations of positronium properties without presenting the intermediate steps that depend on a knowledge of quantum electrodynamics.

This paper is a review of the calculations of positronium state (1) decay rates, (2) energy levels, and (3) external field behavior. Theoretical results are compared with only the latest experimental results. The coverage is substantially complete from the pre-experimental years (1930 to 1950) to the present (1974). Emphasis is placed on stating final theoretical results and giving references to original work rather than giving a step-by-step account of the calculations. (Modified author abstract)

AD-783 857/6GA PC$8.75/MF$2.25
Naval Postgraduate School Monterey Calif
ELECTROEXCITATION OF GIANT RESONANCES BETWEEN 5 MEV AND 40 MEV EXCITATION ENERGY IN 197AU.
Master's thesis,
Kenneth Paul Ferlic, and Ronald Dallas Waddell.
Jun 74, 111p

Descriptors: *Nuclear energy levels, *Electron scattering, *Nuclear resonance, Gold, Curve fitting, Graphics, Computer programs, Theses, FORTRAN.
Identifiers: *Gold 197, Giant resonances, Sum rules.

Inelastic electron scattering from 197Au between 5 MeV and 40 MeV excitation energy revealed giant multipole resonances. Angular distribution studies with incident 90 MeV electrons show evidence of previously unreported giant monopole states. Reduced matrix elements have been extracted and multipolarity assignments have been made. Seven states have been observed at excitations of 7.3 (undetermined magnetic), 9.2 (EO), 10.8 (E2), 14.0 (E1), 18.0 (undetermined), 22.5 (E2), and 33.5 MeV (EO or E2). (Author)

AECL-4708 PC$7.00/MF$2.25
Atomic Energy of Canada Ltd., Chalk River, Ontario. Chalk River Nuclear Labs.
PHYSICS DIVISION. PROGRESS REPORT, 1 OCTOBER--31 DECEMBER 1973.
Jan 74, 77p PR-P-100
U.S. Sales Only.

Descriptors: (*Nuclear physics, *Research programs), (*Ge semiconductor detectors, *Fabrication), (*Two-phase flow, *Simulation), (*Heavy water, Fabrication), Annihilation, Cavities, Loss of coolant, Operation, Performance, Positronium, Reliability, Spheres, Van de graaff accelerators.

For abstract, see NSA 30 04, number 11483.

AEEW-M-1266 PC$6.75/MF$2.25
UKAEA Reactor Group, Winfrith. Atomic Energy Establishment.
MINIGAL: OUTPUT FROM THE FISSION PRODUCTS DATA FILES OF THE UK NUCLEAR DATA LIBRARY (1973)-THERMAL CROSS-SECTIONS, RESONANCE INTEGRALS AND FISSION SPECTRUM AVERAGES.
A. L. Pope. Apr 74, 72p
U.S. Sales Only.

Descriptors: (*Neutron reactions, *Resonance integrals), Fission products, Intermediate mass nuclei, Tables, Cross sections, Fission neutrons, Prompt neutrons, Thermal neutrons, Epithermal neutrons, Ev range, Kev range, Mev range 01-10, Milli ev range, Resonance neutrons, 1/v law.

For abstract, see NSA 30 04, number 11336.

ANL/HEP-7417 PC$4.00/MF$2.25
Argonne National Lab., Ill.
EXPERIMENTAL PROGRAM FOR SCATTERING-AMPLITUDE MEASUREMENTS.
A. Yokosawa. Feb 74, 9p CONF-740226-1

Descriptors: (*Proton-proton interactions, *Scattering amplitudes), Gev range 01-10, Gev range 10-100, Isospin, Linear momentum.

For abstract, see NSA 30 05, number 13814.

ANL/HEP-7423 PC$5.25/MF$2.25
Argonne National Lab., Ill.
REVIEW OF THE "FEYNMAN GAS" AND INCLUSIVE SPECTRA.
G. H. Thomas. Jun 74, 45p CONF-740629-2

Descriptors: (*Inclusive interactions, *Energy spectra), (*Feynman gas model, *Reviews), Equilibrium, Fluids, Multiplicity, Regge cuts, Regge poles, Scale invariance, Statistical mechanics.

For abstract, see NSA 30 05, number 13852.

ANL/HEP-7428 PC$4.00/MF$2.25
Argonne National Lab., Ill.
DIFFRACTIVE PROCESS IN SIX-PRONG PROTON--PROTON INTERACTIONS AT 205 GEV/C.
P. F. Schultz, M. Derrick, B. Musgrave, P. Schreiner, and H. Yuta. 1974, 12p CONF-740713-3

Descriptors: (*Proton-proton interactions, *Diffraction models), Bubble chambers, Charged particles, Cross sections, Decay, Distribution, Gev range 100-1000, Inclusive interactions, Linear momentum, Mass, Missing mass, N resonances.

For abstract, see NSA 30 05, number 13815.

ANL-Trans-952 PC$4.50/MF$2.25
Gosudarstvennyj Komitet po Ispol'zovaniyu Atomnoj Ehnergii SSSR, Moscow. Inst. Atomnoj Ehnergii.
SHORT DESCRIPTION OF THE THERMONUCLEAR FACILITIES OF THE I. V. KURCHATOV INSTITUTE FOR NUCLEAR ENERGY.
M. K. Romanovskii. May 74, 30p
Translation of IAE--2314.

Descriptors: (*Thermonuclear devices, *Bibliographies), Ussr.

For abstract, see NSA 30 05, number 12426.

ANL-8088 PC$5.45/MF$2.25
Argonne National Lab., Ill.
MEASUREMENT OF THE TOTAL CROSS SECTIONS FOR THE EXP 7 LI(D,P) EXP 8 LI, EXP 6 LI(EXP 3 HE,N) EXP 8 B, EXP 6 LI(D, ALPHA) EXP 4 HE, EXP 6 LI(D,P) EXP 7 LI, AND EXP 6 LI(D,N) EXP 7 BE REACTIONS.
C. R. McClenahan. Mar 74, 108p
Contract W-31-109-eng-38

Descriptors: (*Lithium 7, Deuteron reactions), (*Lithium 6, Deuteron reactions), (*Deuteron reactions, *Pickup reactions), (*Helium 3 reactions, *Stripping), Kev range 100-1000, Mev range 01-10, Total cross sections.

For abstract, see NSA 30 04, number 11379.

ANU-P-586 PC$4.00/MF$2.25
Australian National Univ., Canberra. Dept. of Nuclear Physics.
ALPHA CAPTURE TO THE GIANT QUADRUPOLE RESONANCE.
G. S. Foote, D. Branford, N. Shikazono, and D. C. Weisser. Mar 74, 6p
U.S. Sales Only.

Descriptors: (*Silicon 28, *Photonuclear reactions), (*Alpha reactions, *Capture), (*Sulfur 32, Photonuclear reactions), (*Calcium 40, Photonuclear reactions), Comparative evaluations, Cross sections, Excitation, Excited states, Giant resonance, Hauser-feshbach theory, Mev range 10-100, Angular distribution, Gamma radiation.

For abstract, see NSA 30 04, number 11413.

ANU-P-588 PC$5.50/MF$2.25
Australian National Univ., Canberra. Dept. of Nuclear Physics.
DEPARTMENT OF NUCLEAR PHYSICS ANNUAL REPORT, 1973.
Jan 74, 47p
U.S. Sales Only.

Descriptors: (*Nuclear physics, *Research programs), Chromium isotopes, Deuteron reactions, Deuterons, Direct reactions, Excited states, Indium 118, Pickup reactions, Proton reactions, Selenium isotopes, Tin 120, Tritons, Zinc isotopes, Charge-exchange reactions, Elastic scattering, Heavy ion reactions, Lifetime, Light nuclei, Neon 20, Neutrons, Oxygen 16, Rotational states, Capture, Gamma spectra, Iron 56, Neutron reactions, Emission spectroscopy, Hydrogen, Stark effect, Aluminium 27, Calcium 48, Lithium 6, Parity, Polarization, Sodium 22, Spin, Sulfur 32.

For abstract, see NSA 30 04, number 11444.

AREAEE-179 PC$4.50/MF$2.25
Atomic Energy Establishment, Cairo (Egypt).
LEGENDRE EXPANSION AND COORDINATE TRANSFORMATION.
M. N. H. Comsan. 1973, 27p
U.S. Sales Only.

Descriptors: (*Nuclear reactions, *Cross sections), (*Computer codes, *N codes), Coordinates, Fortran, Ibm computers, Legendre polynomials, Series expansion.

For abstract, see NSA 30 05, number 14332.

BNL-18909 PC$4.00/MF$2.25
Yale Univ., New Haven, Conn.; Brookhaven National Lab., Upton, N.Y.
MEASUREMENT OF THE POLARIZATION PARAMETER AND DIFFERENTIAL CROSS SECTION IN K EXP + P ELASTIC SCATTERING FROM 1.7 TO 3.0 GEV/C.
W. A. Barletta, R. D. Ehrlich, A. Etkin, V. W. Hughes, and M. Mishina. 13p CONF-740713-1

Descriptors: (*Kaon-proton interactions, *Elastic scattering), Asymmetry, Boundary conditions, Differential cross sections, Gev range 01-10, Kaons plus, Linear momentum, Linear momentum transfer, Phase shift, Polarization, Recoils, Regge poles, Scattering.

For abstract, see NSA 30 05, number 13835.

BNL-18918 PC$4.75/MF$2.25
Brookhaven National Lab., Upton, N.Y.
REVIEW OF STRANGE MESONS.
R. L. Eisner. 1974, 31p CONF-740408-2

Descriptors: (*Mesons, *Mass spectra), (*K resonances, Mass spectra), Meson resonances, Parity, Reviews, Spectroscopy, Spin, Strange particles.

For abstract, see NSA 30 04, number 11182.

CEA-N-1646 PC$10.75/MF$2.25
CEA Centre d'Etudes Nucleaires de Grenoble, 38 (France). Dept. de Recherche Fondamentale.
SEMI-ANNUAL BULLETIN NO. 3, JANUARY--JUNE 1973.
1973, 151p
In French. U.S. Sales Only.

Descriptors: (*Cea grenoble, *Research programs), (*Nuclear physics, Research programs), (*Physical radiation effects, Research programs), (*Radicals, Research programs), Actinides, Ion beams, Magnetic properties, Nucleic acids, Photochemistry, Proteins, Radiobiology, Rare earths, Sputtering, Stereochemistry, Transition element compounds.

For abstract, see NSA 30 04, number 11578.

CEA-N-1682 PC$9.25/MF$2.25
CEA Centre d'Etudes Nucleaires de Saclay, 91 - Gif-sur-Yvette (France). Dept. de Physique des Particules Elementaires.
STUDY OF K EXP - REACTIONS ON NEUTRONS BETWEEN 1640 AND 1880 MEV USING A DEUTERIUM BUBBLE CHAMBER.
F. Pierre. Jan 74, 124p
In French. U.S. Sales Only.

Descriptors: (*Kaon-neutron interactions, *Inelastic scattering), (*Lambda-1520 resonances, *Particle production), (*Lambda-1405 resonances, Particle production), (*Delta-1236 resonances, Particle production), Angular distribution, Baryon resonances, Branching ratio, Differential cross sections, Gev range 01-10, Isospin, K-892 resonances, Kaons minus, Lambda particles, Parity, Sigma minus, Sigma neutral, Sigma plus, Spin, Strange particles.

For abstract, see NSA 30 04, number 11016.

CONF-7309105-1 PC$5.00/MF$2.25
Institutul de Fizica Atomica, Bucharest (Romania).
IMPROPER PROBLEMS IN DISPERSION RELATIONS.
S. Ciulli. 1973, 42p
U.S. Sales Only.

Descriptors: (*Particle interactions, *Dispersion relations), Errors, Instability.

For abstract, see NSA 30 04, number 11039.

CONF-740320-2 PC$4.50/MF$2.25
Argonne National Lab., Ill.
STATUS OF PREDICTIONS OF PHOTON STRENGTH FUNCTIONS BY GIANT DIPOLE RESONANCE AND VALENCE MODELS.
H. E. Jackson. 1974, 26p

Descriptors: (*Tantalum 181, *Neutron reactions), (*Photonuclear reactions, *Giant resonance), Cross sections, Dipoles, Electric dipole moments, Energy-level transitions, Excited states, Gamma spectra, Magnetic dipole moments, Nuclear models, Particle production, Photons, Reviews, Strength functions, Threshold energy.

For abstract, see NSA 30 04, number 11445.

CONF-740419-1 PC$5.00/MF$2.25
Oak Ridge National Lab., Tenn.
SURVEY OF EV AND KEV NEUTRON REACTIONS.
J. A. Harvey. 1974, 39p

Descriptors: (*Neutron reactions, *Reviews), (*Calcium, Neutron reactions), (*Lead 207, Neutron reactions), (*Lead 206, Neutron reactions), Kev range, Excitation functions, Fast neutrons, Kev range 100-1000, Total cross sections, Fission, Intermediate neutrons, Kev range 01-10, Plutonium 240, Uranium 238, Cross sections, Ev range 100-1000, Level widths, Uranium 234, Capture, Gamma radiation, Plutonium 241.

For abstract, see NSA 30 04, number 11579.

CONF-740526-1 PC$4.00/MF$2.25
Oak Ridge National Lab., Tenn.
RECENT U.S. EXPERIMENTAL DATA AND EVALUATION FOR EXP 239 PU.
G. de Saussure. 1974, 16p

Descriptors: (*Plutonium 239, Neutron reactions), (*Neutron reactions, *Capture), Cross sections, Fission, Reviews.

For abstract, see NSA 30 04, number 11580.

CONF-740526-2 PC$4.00/MF$2.25
Oak Ridge National Lab., Tenn.
RECENT MEASUREMENTS ON U-238 AT ORNL.
G. de Saussure. 1974, 16p

Descriptors: (*Uranium 238, Neutron reactions), (*Neutron reactions, *Capture), Cross sections, Ev range, Kev range 01-10, Kev range 10-100.

For abstract, see NSA 30 04, number 11581.

CONF-740633-1 PC$5.25/MF$2.25
Oak Ridge National Lab., Tenn.
ELECTRONIC STATES OF IONS RECOILING INTO VACUUM AND GASES.
S. Datz. 1973, 41p

Descriptors: (*Nuclei, *Charge exchange), (*Atom collisions, *Electron transfer), (*Ions, Electron transfer), (*Recoils, Electron transfer), Coulomb excitation, Electron capture, Electron loss, Electronic structure, Energy levels, Excitation, Hyperfine structure, Ion collisions, Nuclear reactions, Perturbed angular correlation, Time dependence.

For abstract, see NSA 30 05, number 14333.

COO-1428-332(Rev.) PC$4.50/MF$2.25
Purdue Univ., Lafayette, Ind.
P-P AND P-D ELASTIC AND INELASTIC SCATTERING IN THE NEW CO INTERNAL TARGET LABORATORY.
F. Loeffler. 7 Feb 74, 29p
Contract AT(11-1)-1428

Descriptors: (*Proton-proton interactions, *Elastic scattering), (*Proton-deuteron interactions, Elastic scattering), Gev range, Inelastic scattering.

For abstract, see NSA 30 04, number 10988.

COO-1505-69 PC$4.50/MF$2.25
Purdue Univ., Lafayette, Ind. Dept. of Chemistry.
DEEXCITATION PROCESSES IN NUCLEAR REACTIONS. PROGRESS REPORT, MAY 1, 1973--APRIL 30, 1974.
N. T. Porile. May 74, 26p
Contract AT(11-1)-1505

Descriptors: (*Nuclear reactions, *Research programs), Cross sections, Electric charges, Energy dependence, Isospin, Recoils.

For abstract, see NSA 30 04, number 11485.

COO-1530-43 PC$5.25/MF$2.25
Washington Univ., St. Louis, Mo. Dept. of Chemistry.
LOW ENERGY NUCLEAR REACTIONS AND SPECTROSCOPY. TECHNICAL PROGRESS REPORT, SEPTEMBER 15, 1973--JUNE 15, 1974.
D. G. Sarantites. 15 Jun 74, 43p
Contract AT(11-1)-1530

Descriptors: (*Compound-nucleus reactions, *Research programs), (*Nuclear structure, Research programs), Alpha reactions, Doppler effect, Hauser-feshbach theory, High spin states, Iron 54, Nickel 61, Nuclear reaction kinetics, Proton reactions.

For abstract, see NSA 30 04, number 11471.

COO-1545-140 PC$4.00/MF$2.25
Ohio State Univ., Columbus Dept. of Physics.
IS THE POMERON A GOLDSTONE BOSON.
S. S. Pinsky, and V. Rabl. 1974, 12p
Contract AT(11-1)-1545

Descriptors: (*Pomeranchuk particles, *Goldstone bosons), Gauge invariance, Quantum field theory, Regge cuts, Regge poles, Regge trajectories, Symmetry breaking.

For abstract, see NSA 30 05, number 13943.

COO-2114-10 PC$4.00/MF$2.25
Colorado Univ., Boulder Dept. of Physics and Astrophysics.
NEW DEVELOPMENTS IN THE K/SUB S/ DECAY PARAMETERS AND THE CP VIOLATION PARAMETERS IN THE K/SUB L/ SYSTEM.
U. Nauenberg. 1973, 18p
Contract AT(11-1)-2114

Descriptors: (*Kaons neutral short-lived, *Decay), (*Kaons neutral long-lived, Decay), (*Cp invariance, Kaons neutral long-lived), Branching ratio, Lifetime, Reviews.

For abstract, see NSA 30 05, number 13919.

COO-2114-11 PC$4.00/MF$2.25
Colorado Univ., Boulder.
TABLES OF EVENT RATES IN DEEP INELASTIC ELECTRON SCATTERING.
U. Nauenberg. 1973, 14p

Descriptors: (*Electron-nucleon interactions, *Inelastic scattering), Tables.

For abstract, see NSA 30 05, number 13793.

COO-2280-9 PC$4.00/MF$2.25
Northwestern Univ., Evanston, Ill.
COMPUTATIONAL COMPLEXITY IN MULTIDIMENSIONAL NEUTRON TRANSPORT THEORY CALCULATIONS. PROGRESS REPORT, SEPTEMBER 1, 1973--AUGUST 31, 1974.
E. H. Bareiss. 1974, 14p
Contract AT(11-1)-2280

Descriptors: (*Neutron diffusion equation, *Numerical solution), (*Neutron transport theory, *Programming), Computer codes.

For abstract, see NSA 30 04, number 11337.

COO-3058-50 PC$4.00/MF$2.25
Rensselaer Polytechnic Inst., Troy, N.Y.
LINEAR ACCELERATOR PROJECT. PROGRESS REPORT, JANUARY 1, 1974--MARCH 31, 1974.
1974, 10p
Contract AT(11-1)-3058

Descriptors: (*Neutron reactions, *Research programs), (*Neutron transport theory, Research programs), Cross sections, Intermediate mass nuclei, Plutonium 242.

For abstract, see NSA 30 04, number 11582.

COO-3065-74 PC$12.25/MF$2.25
Rochester Univ., N.Y. Dept. of Physics and Astronomy.
STUDY OF THE COHERENT PRODUCTION REACTION PI EXP - + A IMPLIES PI EXP - + PI EXP 0 + A.
L. Strawczynski. 1974, 182p UR-475

Descriptors: (*Carbon, *Pion reactions), (*Aluminium, Pion reactions), (*Copper, Pion reactions), (*Silver, Pion reactions), Boundary conditions, Coherent production, Coulomb field, Coupling, Decay, Decay amplitudes, Emission, Gev range 10-100, Hadron-hadron interactions, Interference, Lead, Linear momentum, Obe model, Omega-784 resonances, Optical models, Particle widths, Phi-1019 resonances, Pions minus, Pions neutral, Quark model, Rho-765 resonances, Surfaces, Uranium.

For abstract, see NSA 30 05, number 13836.

COO-3069-190 PC$4.25/MF$2.25
Massachusetts Inst. of Tech., Cambridge.
DYNAMICAL SYMMETRY BREAKING.
R. Jackiw. Jul 73, 23p

Descriptors: (*Electrodynamics, *Symmetry breaking), Bound state, Spinors.

For abstract, see NSA 30 05, number 14037.

COO-3071-88 PC$4.00/MF$2.25
Pennsylvania Univ., Philadelphia Dept. of Physics.
ELECTROMAGNETIC INTERACTION OF NEUTRINOS IN GAUGE THEORIES OF WEAK INTERACTIONS.
V. K. Cung, and M. Yoshimura. 9 Apr 74, 15p

Descriptors: (*Photon-neutrino interactions, *Scattering amplitudes), Electromagnetic interactions, Gauge invariance, Perturbation theory, Virtual particles, Weak interactions.

For abstract, see NSA 30 04, number 11085.

COO-3071-89 PC$4.75/MF$2.25
Pennsylvania Univ., Philadelphia Dept. of Physics.
INVESTIGATIONS IN TWO-DIMENSIONAL VECTOR MESON FIELD THEORIES.
G. Segre, and W. I. Weisberger. 18 Mar 74, 32p

Descriptors: (*Vector mesons, *Quantum field theory), Coupling, Fermions, Mass, Mathematical space, Time dependence, Two-dimensional calculations, Yang-mills theory.

For abstract, see NSA 30 04, number 11183.

COO-3072-13 PC$8.00/MF$2.25
Princeton Univ., N.J. Elementary Particles Lab.
MEASUREMENT OF THE CHARGE ASYMMETRY IN K/SUB L/ EXP 0 IMPLIES PI EXP -+ E EXP + NU DECAYS.
R. C. Webb. Jun 72, 97p
Contract AT(11-1)-3072

Descriptors: (*Kaons neutral long-lived, *Leptonic decay), Asymmetry, Branching ratio, Electric charges, Electrons, Neutrinos, Pions minus, Pions plus, Positrons, Scattering amplitudes.

For abstract, see NSA 30 04, number 10975.

COO-3072-14 PC$10.00/MF$2.25
Princeton Univ., N.J. Elementary Particles Lab.
NEUTRON PROTON CHARGE EXCHANGE SCATTERING FROM 8 TO 29 GEV/C. TECHNICAL REPORT NO. 4.
M. B. Davis. Sep 72, 138p
Contract AT(11-1)-3072

Descriptors: (*Proton-neutron interactions, *Charge-exchange interactions), Differential cross sections, Energy dependence, Gev range 01-10, Gev range 10-100, Linear momentum, Linear momentum transfer, Neutrons, Recoils.

For abstract, see NSA 30 04, number 10989.

COO-3072-17 PC$10.50/MF$2.25
Princeton Univ., N.J. Elementary Particles Lab.
MEASUREMENT OF THE K/SUB S/ CONTENT OF THE K EXP 0 STATE AND THE BRANCHING RATIO BETWEEN THE K/SUB S/ 2 PI DECAYS. TECHNICAL REPORT NO. 5.
D. J. Sager. Dec 72, 147p
Contract AT(11-1)-3072

Descriptors: (*Kaons neutral short-lived, *Decay), (*Kaons neutral long-lived, Decay), (*Cpt theorem, *Hamiltonians), Branching ratio, Emission, Pions minus, Pions neutral, Pions plus.

For abstract, see NSA 30 04, number 10976.

COO-3227-38 PC$5.00/MF$2.25
Harvard Univ., Cambridge, Mass. Gordon McKay Lab.; Massachusetts Inst. of Tech., Cambridge Dept. of Mathematics.
BEYOND THE RISING TOTAL CROSS SECTIONS.
T. T. Wu, and H. Cheng. 1973, 40p CONF-730841-4
Contract AT(11-1)-3227

Descriptors: (*Proton-proton interactions, *Elastic scattering), (*Pion-proton interactions, Elastic scattering), (*Kaon-proton interactions, Elastic scattering), (*Proton-antiproton interactions, Elastic scattering), Absorption, Boundary conditions, Coupling constants, Cross sections, Differential cross sections, Diffraction models, Energy dependence, Inelastic scattering, Kaons minus, Kaons plus, Linear momentum, Parity, Particle models, Pionization, Pions minus, Pions plus, Potential scattering, Relativistic range, Reviews, Scattering amplitudes, Spin, Tev range, Total cross sections, Unitarity.

For abstract, see NSA 30 05, number 13981.

COO-3230-3 PC$4.00/MF$2.25
Brandeis Univ., Waltham, Mass. Dept. of Physics.
RESEARCH IN ELEMENTARY PARTICLE PHYSICS. TECHNICAL PROGRESS REPORT, SEPTEMBER 1, 1973--MAY 29, 1974.
L. E. Kirsch, and H. J. Schnitzer. 1974, 13p
Contract AT(11-1)-3230

Descriptors: (*Elementary particles, *Research programs).

For abstract, see NSA 30 04, number 11040.

COO-3235-40 PC$6.25/MF$2.25
Brown Univ., Providence, R.I. Dept. of Physics; Naval Research Lab., Washington, D.C.
DISPERSION CORRECTIONS TO ELASTIC ELECTRON SCATTERING BY EXP 12 C AND EXP 16 O. II. ON THE USE OF THE CLOSURE APPROXIMATION.
J. L. Friar, and M. Rosen. 1973, 64p
Contract AT(11-1)-3235

Descriptors: (*Carbon 12, Electron reactions), (*Oxygen 16, Electron reactions), (*Electron reactions, *Elastic scattering), Center-of-mass system, Corrections, Coulomb field, Dispersion relations, Harmonic oscillator models, Mev range 100-1000, Perturbation theory, Recoils, Shell models.

For abstract, see NSA 30 04, number 11380.

COO-3239-11 PC$4.50/MF$2.25
Carnegie-Mellon Univ., Pittsburgh, Pa. Dept. of Chemistry.
NUCLEAR CHEMISTRY RESEARCH OF HIGH ENERGY NUCLEAR REACTIONS AT CARNEGIE-MELLON UNIVERSITY. ANNUAL PROGRESS REPORT, 1973--1974.
A. A. Jr. Caretto. May 74, 27p
Contract AT(11-1)-3239

Descriptors: (*Intermediate mass nuclei, Nuclear reactions), (*Light nuclei, Nuclear reactions), (*Nuclear reactions, *Research programs).

For abstract, see NSA 30 05, number 14268.

COO-3533-30 PC$6.00/MF$2.25
Syracuse Univ., N.Y. Dept. of Physics.
LECTURES ON DUAL RESONANCE MODELS. PART SIX. SYMMETRIC GROUP.
P. H. Frampton. 1974, 56p SU-4205-30
Contract AT(11-1)-3533

Descriptors: (*Dual resonance model, *Lectures), Regge poles, Regge trajectories.

For abstract, see NSA 30 04, number 11156.

DESY-74-10 PC$4.00/MF$2.25
Deutsches Elektronen-Synchrotron (DESY), Hamburg (F.R. Germany).
QUARK FRAGMENTATION FUNCTIONS IN HADRONIC AND DEEP INELASTIC SINGLE PARTICLE INCLUSIVE PROCESSES.
B. Flume-Gorczyca. Mar 74, 12p
U.S. Sales Only.

Descriptors: (*Pions, *Electroproduction), (*Hadron-hadron interactions, *Inclusive interactions), (*Quark model, Inclusive interactions), Cross sections, Parton model.

For abstract, see NSA 30 04, number 11086.

DESY-74-11 PC$5.25/MF$2.25
Deutsches Elektronen-Synchrotron (DESY), Hamburg (F.R. Germany).
PHOTOPRODUCTION OF RHO EXP 0 , OMEGA AND RHO EXP - MESONS ON DEUTERONS AT ENERGIES BETWEEN 1 AND 5 GEV.
P. Benz, O. Braun, and H. Butenschoen. Mar 74, 43p
U.S. Sales Only.

Descriptors: (*Rho-765 resonances, *Photoproduction), (*Omega-784 resonances, Photoproduction), Coupling constants, Differential cross sections, Duality, Factorization, Gev range 01-10, Mass spectra, Photon-deuteron interactions, Photon-neutron interactions, Photon-proton interactions, Regge poles, Total cross sections.

For abstract, see NSA 30 04, number 10964.

DESY-74-4 PC$7.00/MF$2.25
Deutsches Elektronen-Synchrotron (DESY), Hamburg (F.R. Germany).
ASYMPTOTIC BEHAVIOUR AT EXCEPTIONAL MOMENTA.
H. J. Thun. Feb 74, 76p
U.S. Sales Only.

Descriptors: (*Vertex functions, *Boundary conditions), Energy levels, Euclidean space, Light cone, Linear momentum, Minkowski space, Series expansion.

For abstract, see NSA 30 04, number 11041.

FRNC-TH-477 PC$6.75/MF$2.25
Paris-11 Univ., 91 - Orsay (France).
STUDY OF NUCLEAR FORCE CHARGE SYMMETRY (BARSHAY--TEMMER TEST) IN THE EXP 4 HE + EXP 2 H IMPLIES EXP 3 HE + EXP 3 H REACTION AT 55 MEV (CENTER OF MASS SYSTEM).
T. Heanino. 1973, 72p
In French. U.S. Sales Only.

Descriptors: (*Alpha reactions, *Stripping), (*Deuterium, Alpha reactions), (*Nuclear forces, *Charge independence), Angular distribution, Asymmetry, Coulomb field, Differential cross sections, Direct reactions, Dwba, Finite-range interactions, Helium 3, Isospin, Mev range 10-100, Mev range 100-1000, Nuclear reaction kinetics, One-nucleon transfer reactions, Tritons, Zero-range approximation.

For abstract, see NSA 30 04, number 11357.

IFA-CRD-56-1974 PC$4.00/MF$2.25
Institutul de Fizica Atomica, Bucharest (Romania).
SUBPROGRAMS FOR THE CALCULATION OF THE CLEBSCH--GORDAN, RACAH, AND FANO COEFFICIENTS USING THE PDP-8/I COMPUTER.
M. Duma, and C. M. Teodorescu. 1974, 15p
In Rumanian. U.S. Sales Only.

Descriptors: (*Computer codes, *C codes), (*Clebsch-gordan coefficients, Computer codes), (*Racah coefficients, Computer codes), (*Angular momentum, *Coupling), J codes, Pdp computers, Programming, R codes.

For abstract, see NSA 30 04, number 11596.

IFA-DNBR-7-1973 PC$5.50/MF$2.25
Institutul de Fizica Atomica, Bucharest (Romania).
DATA HANDLING PROGRAM SET FOR THE EVALUATED MICROSCOPIC NUCLEAR DATA STOCKED IN THE COMPUTERIZED LIBRARY "DANEM-1" FROM THE IAP.
S. Mateescu, A. Badescu-Singureanu, and N. Deciu. 1973, 48p
In Rumanian. U.S. Sales Only.

Descriptors: (*Nuclear data collections, *Data processing), C codes, Computer codes, G codes, I codes, R codes.

For abstract, see NSA 30 04, number 11340.

IFA-FR-119-1974 PC$4.25/MF$2.25
Institutul de Fizica Atomica, Bucharest (Romania).
DTF-4: PROGRAM FOR THE SOLUTION OF THE ONE-DIMENSIONAL MULTIGROUP TRANSPORT EQUATION.
M. Stanou. 1974, 24p
In Rumanian. U.S. Sales Only.

Descriptors: (*Computer codes, *D codes), (*Multigroup theory, Computer codes), (*Neutron transport theory, Computer codes), (*Slabs, *Neutron transport), Carlson method, Cylinders, Fortran, Ibm computers, One-dimensional calculations, Spheres.

For abstract, see NSA 30 04, number 11341.

IFA-HE-84-1974 PC$4.00/MF$2.25
Institutul de Fizica Atomica, Bucharest (Romania).
INTERPRETATION OF RECENT DATA ON PROTON--NUCLEUS COLLISION AT VERY HIGH ENERGIES.
E. M. Friedlaender. 1974, 12p
U.S. Sales Only.

Descriptors: (*Proton reactions, *Particle production), (*Mesons, Particle production), (*Particle models, Particle production), Cascade showers, Energy.

For abstract, see NSA 30 04, number 11224.

IFA-HE-85-1974 PC$4.00/MF$2.25
Institutul de Fizica Atomica, Bucharest (Romania).
ENERGY DEPENDENCE OF CHARGED MULTIPLICITY IN PROTON--NUCLEUS COLLISION AND "NUCLEAR" MULTIPLICITY SCALING.
E. M. Friedlaender, M. Marcu, and R. Nitu. 1974, 9p
U.S. Sales Only.

Descriptors: (*Multiple production, *Scale invariance), (*Proton reactions, Multiple production), Gev range 10-100, Multiplicity, Nuclear emulsions.

For abstract, see NSA 30 04, number 10990.

IFA-HE-86-1974 PC$4.00/MF$2.25
Institutul de Fizica Atomica, Bucharest (Romania).
EVIDENCE FOR "NUCLEAR MULTIPLICITY SCALING" ABOVE 200 GEV.
E. M. Friedlaender, and A. A. Marin. 1974, 9p
U.S. Sales Only.

Descriptors: (*Proton reactions, *Scale invariance), Gev range 100-1000, Mesons, Multiplicity, Tev range.

For abstract, see NSA 30 04, number 10991.

IFA-HE-87-1974 PC$4.00/MF$2.25
Institutul de Fizica Atomica, Bucharest (Romania).
UNEXPECTED APPARENT TRANSPARENCE OF NUCLEAR MATTER FOR HIGH-ENERGY HADRONS, OBSERVED IN P--NUCLEUS COLLISION AT 200 GEV.
J. I. Cohen, E. M. Friedlaender, M. Marcu, A. A. Marin, and R. Nitu. 1974, 8p
U.S. Sales Only.

Descriptors: Angular distribution, Gev range 100-1000, Nuclear emulsions, Nuclear matter, Proton reactions.

For abstract, see NSA 30 04, number 10992.

IFA-HE-88-1974 PC$4.00/MF$2.25
Institutul de Fizica Atomica, Bucharest (Romania).
COMPARISON OF MULTIPLICITIES IN PION--NUCLEUS AND PROTON--NUCLEUS INTERACTIONS AROUND 60 GEV.
B. Bogdan, I. Cincheza, J. Cohen, E. M. Friedlaender, and M. Haiduc. 1974, 7p
U.S. Sales Only.

Descriptors: (*Pion reactions, *Multiple production), (*Proton reactions, Multiple production), Distribution, Gev range 10-100, Linear momentum, Multiplicity, Nuclear emulsions, Pions minus, Scaling laws.

For abstract, see NSA 30 04, number 11017.

IFA-NR-9-1972 PC$6.25/MF$2.25
Institutul de Fizica Atomica, Bucharest (Romania).
MOESSBAUER ISOTOPE TABLES.
D. Barb, and M. Morariu. 1972, 65p
U.S. Sales Only.

Descriptors: (*Heavy nuclei, *Energy-level transitions), (*Intermediate mass nuclei, Energy-level transitions), Energy levels, Internal conversion, Lifetime, Line widths, Magnetic moments, Moessbauer effect, Parity, Quadrupole moments, Spin.

For abstract, see NSA 30 04, number 11524.

IFA-RN-50-1974 PC$6.75/MF$2.25
Institutul de Fizica Atomica, Bucharest (Romania).
MECHANISM FOR INDUCED FISSION WITH THERMAL AND FAST NEUTRONS ON EXP 235 EXP 238 U AND EXP 239 PU.
M. Cristu. 1974, 71p
In Rumanian. U.S. Sales Only.

Descriptors: (*Uranium 235, Neutron reactions), (*Uranium 238, Neutron reactions), (*Plutonium 239, Neutron reactions), (*Neutron reactions, *Fast fission), Compound nuclei, Correlations, Delayed neutrons, Electric charges, Emission, Energy spectra, Excitation, Fast neutrons, Fission fragments, Mass, Prompt neutrons, Reviews, Thermal fission, Thermal neutrons.

For abstract, see NSA 30 05, number 14334.

INDC(SEC)-38-U PC$9.50/MF$2.25
International Atomic Energy Agency, Vienna (Austria). International Nuclear Data Committee.
WRENDA 74: WORLD REQUEST LIST FOR NUCLEAR DATA MEASUREMENTS. FISSION REACTOR PROGRAMMES.
Apr 74, 129p
U.S. Sales Only.

Descriptors: (*Nuclear reactions, *Data), Reactors.

For abstract, see NSA 30 04, number 12066.

INS-623 PC$10.25/MF$2.25
Department of Scientific and Industrial Research, Lower Hutt (New Zealand). Inst. of Nuclear Sciences.
REPORT ON THE WORK OF THE INSTITUTE OF NUCLEAR SCIENCES. PROGRESS REPORT 21, JANUARY--JUNE 1973.
T. A. Rafter. Sep 73, 145p SIR(INS)-5
U.S. Sales Only.

Descriptors: (*Nuclear physics, *Research programs), (*Radiation chemistry, Research programs), Age estimation, Fallout, Geochemistry, Ores, Physical radiation effects, Radiation sources, Radioactivity, Stable isotopes.

For abstract, see NSA 30 04, number 11446.

ISS-L-73-13 PC$4.50/MF$2.25
Istituto Superiore di Sanita, Rome (Italy). Laboratori di Fisica.
CHARMED PARTICLES AND HEAVY LEPTONS.
G. Altarelli, and L. Maiani. 13 Dec 73, 27p
U.S. Sales Only.

Descriptors: (*Heavy leptons, *Particle properties), (*Charm particles, Particle properties), Reviews.

For abstract, see NSA 30 04, number 11141.

JINR-E1-7756 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Problems.
PROTON ELECTROMAGNETIC FORM FACTOR AND HEAVY HYPOTHETICAL PARTICLES.
S. I. Bilenkaya, S. M. Bilen'kii, Yu. M. Kazarinov, and L. I. Lapidus. 1974, 8p
U.S. Sales Only.

Descriptors: (*Protons, *Electromagnetic form factors), Gluon model.

For abstract, see NSA 30 04, number 10965.

JINR-E1-7876 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of High Energy.
ANALYSIS OF TOPOLOGICAL CROSS SECTIONS IN ANTI PP INTERACTIONS AT 22.4 GEV/C.
L. N. Abesalashvili, N. S. Amaglobeli, and I. V. Boguslavskii. 1974, 14p
U.S. Sales Only.

Descriptors: (*Proton-antiproton interactions, *Cross sections), Distribution, Gev range 10-100, Linear momentum, Multiplicity, Scale invariance, Topology.

For abstract, see NSA 30 04, number 10995.

JINR-E1-7901 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Computing Techniques and Automation.
MULTIPLICITY SYSTEMATICS OF PI EXP 0 , K EXP 0 /SUB S/ AND LAMBDA PRODUCED IN HIGH ENERGY COLLISIONS.
S. Berceanu, and T. Ponta. 1974, 12p
U.S. Sales Only.

Descriptors: (*Pion-proton interactions, *Multiple production), (*Proton-proton interactions, Multiple production), (*Pions neutral, Multiple production), (*Kaons neutral short-lived, Multiple production), Energy dependence, Functions, Inclusive interactions, Lambda particles, Scale invariance.

For abstract, see NSA 30 05, number 13816.

JINR-E2-7733 PC$4.75/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
NUCLEON ISOSPIN-POLARIZATION AND ISOSPIN BOUNDS IN PION--NUCLEON SCATTERING.
D. B. Ion, and A. C. Mihul. 1974, 35p
U.S. Sales Only.

Descriptors: (*Pion-nucleon interactions, *Isospin), Boundary conditions, Charge-exchange interactions, Elastic scattering, Pions minus, Pions plus, Polarization, Resonance, Scattering amplitudes.

For abstract, see NSA 30 04, number 11020.

JINR-E2-7734 PC$4.25/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
ISOSPIN- AND ISOSPIN-SPIN-POLARIZATIONS OF INTERACTING HADRONS.
D. B. Ion, and A. C. Mihul. 1974, 24p
U.S. Sales Only.

Descriptors: (*Pion-proton interactions, *Isospin), (*Nucleons, Isospin), Charge-exchange interactions, Elastic scattering, Final-state interactions, Hadrons, Polarization, Spin.

For abstract, see NSA 30 04, number 11202.

JINR-E2-7819 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
SOME REMARKS ON LORENTZ INVARIANT VARIABLES FOR MANY-PARTICLE REACTIONS.
K. V. Laurikainen, and E. A. Mihul. 1974, 18p
U.S. Sales Only.

Descriptors: (*Inclusive interactions, *Many-body problem), (*Exclusive interactions, Many-body problem), Final-state interactions, Geometry, Linear momentum, Lorentz invariance, Reaction kinetics, Resonance particles.

For abstract, see NSA 30 04, number 11046.

JINR-E2-7835 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
K/SUB S/, K/SUB L/ MASS DIFFERENCE.
V. N. Pervushin, and M. K. Volkov. 1974, 14p
U.S. Sales Only.

Descriptors: (*Kaons neutral short-lived, *Mass difference), (*Kaons neutral long-lived, Mass difference), Chirality, Quantum field theory.

For abstract, see NSA 30 04, number 11186.

JINR-E2-7851 PC$4.50/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
SELECTION RULES FOR DUAL RESONANCE STATES.
Kh. D. Popov, D. Ts. Stoyanov, and A. N. Tavkhelidze. 1974, 28p
U.S. Sales Only.

Descriptors: (*Veneziano model, *Selection rules), Factorization, Relativistic range, Scattering amplitudes, Sl groups.

For abstract, see NSA 30 04, number 11047.

JINR-E2-7890 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
NEW INVARIANT DESCRIPTION OF THE NUCLEON MEAN-SQUARE RADIUS.
N. B. Skachkov. 1974, 13p
U.S. Sales Only.

Descriptors: (*Nucleons, *Particle radii), Coordinates, Lorentz groups, Series expansion, Spatial distribution.

For abstract, see NSA 30 04, number 11203.

JINR-E4-7753 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
PHENOMENOLOGY OF THE BACK-BENDING AT HIGH SPINS IN NUCLEAR ROTATIONAL BANDS.
E. Nadzhakov, A. Apostolova, and V. Kitipova. 1974, 20p
U.S. Sales Only.

Descriptors: (*Ytterbium 166, *Rotational states), (*Erbium 162, Rotational states), (*Erbium 160, Rotational states), (*Erbium 158, Rotational states), Energy levels, High spin states, Moment of inertia, Spin, Velocity.

For abstract, see NSA 30 04, number 11525.

JINR-E4-7764 PC$4.25/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
APPROXIMATE SOLUTION OF THE EQUATIONS OF THE MODEL FOR THE DESCRIPTION OF HIGHLY EXCITED STATES OF DOUBLY EVEN DEFORMED NUCLEI.
G. Kyrchev, and V. G. Soloviev. 1974, 22p
U.S. Sales Only.

Descriptors: (*Even-even nuclei, *Energy levels), (*Deformed nuclei, Energy levels), (*Nuclear models, *Bcs theory), Nuclear structure, Phonons, Secular equation.

For abstract, see NSA 30 04, number 11598.

JINR-E4-7812 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
MIXING OF THE VIBRATIONAL AND TWO-QUASIPARTICLE EXCITATIONS IN ISOTONES N = 80, 82, 84.
A. I. Vdovin, and Ch. Stoyanov. 1974, 18p
U.S. Sales Only.

Descriptors: (*Intermediate mass nuclei, *Energy levels), (*Even-even nuclei, Energy levels), Bcs theory, Configuration mixing, Energy-level transitions, Excitation, Interference, Isotonic nuclei, Phonons, Probability, Quadrupole moments, Quasi particles, Vibrational states, Wave functions.

For abstract, see NSA 30 04, number 11486.

JINR-E4-7838 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
MIXING OF VIBRATIONAL AND TWO-QUASIPARTICLE EXCITATIONS IN TE, SN, AND CD ISOTOPES.
A. I. Vdovin, and Ch. Stoyanov. 1974, 18p
U.S. Sales Only.

Descriptors: (*Tellurium isotopes, *Energy levels), (*Tin isotopes, Energy levels), (*Cadmium isotopes, Energy levels), Bcs theory, Configuration mixing, Energy-level transitions, Interference, Nuclear structure, Probability, Quadrupole moments, Quasi particles, Vibrational states.

For abstract, see NSA 30 04, number 11487.

JINR-E6-7762 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Problems.
ON THE DECAY SCHEMES OF EXP 123 BA AND EXP 125 BA.
R. Arlt, A. Jasinski, W. Neubert, and H. -G. Ortlepp. 1974, 20p
U.S. Sales Only.

Descriptors: (*Barium 125, *Beta-plus decay), (*Barium 123, Beta-plus decay), Coincidence methods, Decay, Gamma radiation, Gamma spectra, Half-life.

For abstract, see NSA 30 04, number 11488.

JINR-P-7136 PC$11.75/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR).
REPORT ON THE ACTIVITY OF THE JOINT INSTITUTE FOR NUCLEAR RESEARCH, DUBNA, 1972.
1973, 174p
In Russian. U.S. Sales Only.

Descriptors: (*Nuclear structure, *Research programs), (*High energy physics, Research programs), (*Accelerators, Research programs), Computers, Neutrons, Nuclear properties.

For abstract, see NSA 30 04, number 11048.

JINR-P1-7840 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Problems.
MEASUREMENT OF THE PI EXP - P IMPLIES PI EXP 0 PI EXP 0 N REACTION CROSS SECTION AT 276 MEV.
A. V. Kravtsov, A. V. Kuptsov, L. L. Nemenov, E. A. Starchenko, and D. M. Khazins. 1974, 18p
In Russian. U.S. Sales Only.

Descriptors: (*Pion-proton interactions, *Cross sections), Final-state interactions, Mev range 100-1000, Neutrons, Particle production, Photons, Pions minus, Pions neutral.

For abstract, see NSA 30 04, number 11021.

JINR-P1-7844 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of High Energy.
CORRELATIONS OVER THE MULTIPLICITIES OF NEUTRAL AND CHARGED PI - MESONS.
N. Angelov, V. G. Grishin, and P. Kerachev. 1974, 14p
In Russian. U.S. Sales Only.

Descriptors: (*Pions minus, *Multiple production), (*Pions neutral, Multiple production), (*Pion-proton interactions, Multiple production), Correlations, Dispersion relations, Distribution, Gev range 10-100, Isotropy, Linear momentum, Mesons, Multiplicity.

For abstract, see NSA 30 05, number 13996.

JINR-P1-7854 PC$4.25/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of High Energy.
TWO-PARTICLE CORRELATIONS IN 40 GEV PI EXP - P INCLUSIVE REACTIONS AND PARTICLE PRODUCTION MECHANISMS.
V. G. Grishin, M. Sabzy, and A. N. Solomin. 1974, 22p
In Russian. U.S. Sales Only.

Descriptors: (*Pion-proton interactions, *Inclusive interactions), Cluster model, Correlations, Gev range 10-100, Multiperipheral model, Pair production, Pions minus, Pions plus, Regge poles, Transverse momentum.

For abstract, see NSA 30 05, number 13997.

JINR-P1-7892 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Problems.

MEASUREMENT OF THE POSITIVE MUON LIFETIME.
M. P. Balandin, V. M. Grebenyuk, V. G. Zinov, A. D. Konin, and A. N. Ponomarev. 1974, 18p
In Russian. U.S. Sales Only.

Descriptors: (*Muons plus, *Leptonic decay), Emission, Lifetime, Positrons.

For abstract, see NSA 30 04, number 10978.

JINR-P1-7924 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of High Energy.
SEPARATION OF THE DIFFRACTIVE COMPONENT IN PI EXP - --P INTERACTIONS AT PC = 40 GEV IN THE EFFECTIVE TARGET MASS ANALYSIS.
N. Angelov, K. P. Vishnevskaya, and V. G. Grishin. 1974, 16p
In Russian. U.S. Sales Only.

Descriptors: (*Pion-proton interactions, *Inclusive interactions), Cross sections, Diffraction models, Distribution, Gev range 10-100, Linear momentum, Linear momentum transfer, Mass, Multiplicity, Particle production, Protons, Topology, Total cross sections.

For abstract, see NSA 30 05, number 13837.

JINR-P1-7925 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of High Energy.
EXPERIMENTAL STUDY OF THE K/SUB L/ EXP 0 IMPLIES PI EXP + PI EXP - PI EXP 0 DECAY MATRIX ELEMENT.
I. M. Geshkov, P. K. Markov, and R. K. Trayanov. 1974, 16p
In Russian. U.S. Sales Only.

Descriptors: (*Kaons neutral long-lived, *Decay), Emission, Matrix elements, Pions minus, Pions neutral, Pions plus, Spark chambers.

For abstract, see NSA 30 05, number 13806.

JINR-P2-7702 PC$4.50/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Reactions.
CASCADE-EVAPORATION MODEL FOR PHOTONUCLEAR REACTIONS.
V. S. Barashenko, F. G. Zheregi, A. S. Il'inov, G. G. Jonsson, and V. D. Toneev. 1974, 26p
In Russian. U.S. Sales Only.

Descriptors: (*Photonuclear reactions, *Inelastic scattering), (*Nuclear cascades, Photonuclear reactions), (*Evaporation model, Photonuclear reactions), Fission, Gev range 01-10, Mev range 10-100, Monte carlo method.

For abstract, see NSA 30 04, number 11093.

JINR-P2-7752 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
CORRELATIONS OF NEUTRAL AND CHARGED PARTICLES IN PI EXP - N-COLLISIONS AT P = 40 GEV/C.
N. S. Amaglobeli, V. K. Mitryushkin, A. N. Sissakian, and E. T. Tsivtsivadze. 1974, 18p
In Russian. U.S. Sales Only.

Descriptors: (*Pion-nucleon interactions, *Multiple production), Antikaons neutral, Bubble chambers, Charged particles, Correlations, Gev range 10-100, Hadron-hadron interactions, Hadrons, Kaons minus, Kaons neutral, Kaons plus, Lambda particles, Linear momentum, Neutral particles, Pion-proton interactions, Pions minus, Quantum numbers, Sigma neutral, Strange particles.

For abstract, see NSA 30 04, number 11157.

JINR-P2-7807 PC$4.25/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of High Energy.
ISOTOPIC RELATIONS FOR TWO-PARTICLE INCLUSIVE REACTIONS.
V. L. Lyuboshits, and M. I. Podgoretskii. 1974, 22p
In Russian. U.S. Sales Only.

Descriptors: (*Inclusive interactions, *Two-body problem), Bosons, Correlations, Cross sections, Distribution, Functions, Isospin, Kaons, Linear momentum, Multiplicity, Structure functions, Symmetry.

For abstract, see NSA 30 04, number 11050.

JINR-P2-7853 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
DISPERSION RELATIONS FOR THE LOGARITHM OF THE K EXP +- P FORWARD SCATTERING AMPLITUDE.
O. V. Dumbrais, and M. Stashel. 1974, 18p
In Russian. U.S. Sales Only.

Descriptors: (*Kaon-proton interactions, *Scattering amplitudes), Dispersion relations, Kaons minus, Kaons plus, Mev range 100-1000.

For abstract, see NSA 30 05, number 13998.

JINR-P2-7869 PC$4.25/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
SPACE--TIME DEVELOPMENT OF THE HADRON MULTIPLE PRODUCTION PROCESS.
B. N. Kalinkin, and V. L. Shmonin. 1974, 22p
In Russian. U.S. Sales Only.

Descriptors: (*Hadrons, *Multiple production), Cluster model, Space-time.

For abstract, see NSA 30 05, number 14335.

JINR-P2-7870 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
HYPOTHESIS ON HADRON CLUSTER FORMATION AND THE DATA ON MULTIPLE PRODUCTION IN NUCLEAR MATTER.
B. N. Kalinkin, and V. L. Shmonin. 1974, 20p
In Russian. U.S. Sales Only.

Descriptors: (*Carbon 12, *Proton reactions), (*Nuclear matter, Proton reactions), Cluster model, Energy levels, Hadrons, Multiple production, Nuclear emulsions, Particle production.

For abstract, see NSA 30 05, number 14016.

JINR-P2-7879 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
POSSIBILITY OF RENORMALIZATION OF MODEL FOR PI -N INTERACTIONS WITH PSEUDOVECTOR COUPLING.
V. G. Malyshkin. 1974, 14p
In Russian. U.S. Sales Only.

Descriptors: (*Pion-nucleon interactions, *Renormalization), Coupling, Green function, Mesons, Particle models, Pseudovector coupling.

For abstract, see NSA 30 05, number 13999.

JINR-P2-7976 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
LOCAL STUDY OF REST POINTS OF THE CHEW--LOW TYPE EQUATION.
V. P. Gerdt, and V. A. Meshcheryakov. 1974, 20p
In Russian. U.S. Sales Only.

Descriptors: (*Crossing symmetry, *Matrices), Born approximation, Chew-low method, Differential equations, Group theory, Integrals, Nonlinear problems, Threshold energy.

For abstract, see NSA 30 05, number 14061.

JINR-P3-7800 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Neutron Physics.
MEASUREMENT OF THE SLOW-NEUTRON SCATTERING AMPLITUDES FOR PRASEODYMIUM NUCLEI.
G. G. Akopyan, V. P. Alfimenkov, and E. I. Sharapov. 1974, 14p
In Russian. U.S. Sales Only.

Descriptors: (*Praseodymium, Neutron diffraction), (*Neutron diffraction, *Scattering amplitudes), Coherent scattering, Epithermal neutrons, Ev range 01-10, Incoherent scattering, Milli ev range, Neutron reactions, Praseodymium oxides, Slow neutrons, Time-of-flight method, Total cross sections.

For abstract, see NSA 30 05, number 13169.

JINR-P3-7824 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Neutron Physics.
CONFINEMENT OF NEUTRAL PARTICLES WITH MAGNETIC MOMENT IN FIELDS OF MULTIPOLAR MAGNETS.
I. M. Matora. 1974, 10p
In Russian. U.S. Sales Only.

Descriptors: (*Neutral particles, *Confinement), (*Neutrons, Confinement), (*Atoms, Confinement), Magnetic fields, Magnetic moments, Multipoles, Polarized beams.

For abstract, see NSA 30 05, number 14158.

JINR-P4-7698 PC$8.75/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR).
PROBLEMS IN NUCLEAR REACTION THEORY.
V. V. Babikov. 1974, 112p
In Russian and English. U.S. Sales Only.

Descriptors: (*Heavy ion reactions, *Compound-nucleus reactions), Boson-exchange models, Cross sections, Nuclear forces, Nuclear potential, Potential scattering, Self-consistent field.

For abstract, see NSA 30 04, number 11599.

JINR-P4-7735 PC$4.25/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
ASYMPTOTICALLY EXACT SOLUTION FOR THE GENERALIZED DICKE MODEL.
I. G. Brankov, V. A. Zagrebnov, and N. S. Tonchev. 1974, 22p
In Russian. U.S. Sales Only.

Descriptors: (*Bosons, *Thermodynamics), Anisotropy, Atoms, Boundary conditions, Field theories, Interaction range, Interactions, Particle models, Spin.

For abstract, see NSA 30 04, number 12179.

JINR-P4-7741 PC$4.75/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
CHARGE FORM FACTORS IN NUCLEI IN THE ALPHA-CLUSTER PROJECTION MODEL.
E. V. Inopin, V. S. Kinchakov, V. K. Luk'yanov, and Yu. S. Pol. 1974, 34p
In Russian. U.S. Sales Only.

Descriptors: (*Carbon 12, *Electromagnetic form factors), (*Oxygen 16, Electromagnetic form factors), (*Magnesium 24, Electromagnetic form fac-

tors), (*Silicon 28, Electromagnetic form factors), Calcium 40, Cluster model, Electron reactions, Energy-level transitions, Scattering, Sulfur 32.

For abstract, see NSA 30 04, number 11382.

JINR-P4-7750 PC$4.25/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
SPIN--ORBITAL INTERACTIONS IN DEFORMED NUCLEI.
S. K. Abdulvagabova, and G. Shul'ts. 1974, 22p
In Russian. U.S. Sales Only.

Descriptors: (*Rare earths, *L-s coupling), (*Deformed nuclei, L-s coupling), Dispersion relations, Energy levels, Even-even nuclei, Excitation, Parity, Random phase approximation, Residual interactions, Spin.

For abstract, see NSA 30 04, number 11600.

JINR-P4-7808 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Reactions.
DEORIENTATION OF NUCLEI AND THE ANGULAR DISTRIBUTION OF GAMMA -QUANTA IN REACTIONS WITH HIGH MOMENTUM TRANSFER.
1974, 18p
In Russian. U.S. Sales Only.

Descriptors: (*Compound-nucleus reactions, *Nuclear reaction kinetics), (*Molybdenum isotopes, Alpha reactions), (*Ruthenium isotopes, Alpha reactions), (*Alpha reactions, Compound-nucleus reactions), Angular distribution, Gamma radiation, Linear momentum transfer, Neutrons, Spin orientation.

For abstract, see NSA 30 04, number 11601.

JINR-P4-7814 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
STUDY OF THE INITIAL FRAGMENTATION STAGE IN SPHERICAL NUCLEI.
A. I. Vdovin, V. G. Solov'ev, and Ch. Stoyanov. 1974, 18p
In Russian. U.S. Sales Only.

Descriptors: (*Neodymium 142, *Energy levels), (*Xenon 134, Energy levels), (*Tellurium 124, Energy levels), (*Tin 120, Energy levels), Cadmium 116, Distribution, Energy dependence, Even-even nuclei, Excited states, Interactions, Nuclear forces, Nuclear structure, Phonons, Spherical model.

For abstract, see NSA 30 04, number 11602.

JINR-P4-7815 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
INVERSE PROBLEM IN R-MATRIX SCATTERING THEORY.
V. P. Zhigunov, B. N. Zakhar'ev, S. A. Niyazgulov, and A. A. Suz'ko. 1974, 14p
In Russian. U.S. Sales Only.

Descriptors: (*Inverse scattering problem, *R matrix), Interaction range, Nuclear forces, Resonance.

For abstract, see NSA 30 04, number 11254.

JINR-P4-7820 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
THEORY ON TRANSVERSE INELASTIC NEUTRON SCATTERING IN TRANSITION METALS.
A. L. Kuzemskii. 1974, 18p
In Russian. U.S. Sales Only.

Descriptors: (*Transition elements, Neutron reactions), (*Neutron reactions, *Inelastic scattering), Cross sections, Green function, Hamiltonians, Hartree-fock method, Random phase approximation, Singularity, Spin.

For abstract, see NSA 30 05, number 14234.

JINR-P4-7821 PC$4.50/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
PRE-EQUILIBRIUM DECAY MODEL FOR EXCITED NUCLEI.
K. K. Gudima, G. A. Ososkov, and V. D. Toneev. 1974, 30p
In Russian. U.S. Sales Only.

Descriptors: (*Nuclear reactions, *Precompound-nucleus emission), Decay, Equilibrium, Excited states, Excitons, Markov process, Nuclei, Statistics.

For abstract, see NSA 30 04, number 11473.

JINR-P4-7831 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Neutron Physics.
PORES EFFECT ON ULTRACOLD NEUTRON ABSORPTION IN TRAP WALLS.
V. K. Ignatovich. 1974, 17p
In Russian. U.S. Sales Only.

Descriptors: (*Ultracold neutrons, *Absorption), Cold neutrons, Porosity, Traps, Tunnel effect.

For abstract, see NSA 30 05, number 14159.

JINR-P4-7862 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
MATRIX ELEMENTS OF THE MULTIPOLE OPERATORS IN THE CASE OF ROTATIONAL STATES WITH HIGH ANGULAR MOMENTA.
I. N. Mikhailov. 1974, 17p
In Russian. U.S. Sales Only.

Descriptors: (*Nuclei, *Rotational states), Angular momentum, Distribution, Electric charges, Mathematical operators, Matrix elements, Multipoles, Quantum numbers.

For abstract, see NSA 30 05, number 14336.

JINR-P6-7408 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Problems.
DYNAMIC POLARIZATION OF PROTONS IN POLYETHYLENE AT SUPERLOW TEMPERATURES.
N. S. Borisov, E. I. Bunyatova, Yu. F. Kiselev, B. S. Neganov, and L. B. Parfenov. 1973, 10p
In Russian. U.S. Sales Only.

Descriptors: (*Protons, *Spin orientation), (*Targets, Spin orientation), Magnetic fields, Polarization, Polyethylenes, Spin.

For abstract, see NSA 30 04, number 10996.

JINR-P6-7849 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Problems.
MEASUREMENT OF THE SUBMICROSECOND LIFETIMES OF THE LEVELS BY THE METHOD OF A SINGLE-CRYSTAL SCINTILLATION TIME SPECTROMETER.
M. Budzynski, V. S. Buttsev, K. Ya. Gromov, R. Ion-Mikhai, and V. G. Kalinnikov. 1974, 13p
In Russian. U.S. Sales Only.

Descriptors: (*Krypton 79, *Energy levels), (*Lanthanum 133, Energy levels), (*Promethium 141, Energy levels), (*Dysprosium 155, Energy levels), Erbium 159, Erbium 161, Isomeric nuclei, Lifetime, Thulium 169, Ytterbium 167.

For abstract, see NSA 30 04, number 11526.

JINR-P6-7850 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Problems.
NATURE OF THE 839-MEV LEVEL IN EXP 151 GD.
V. V. Kuznetsov, V. A. Morozov, and T. M. Muminov. 1974, 9p
In Russian. U.S. Sales Only.

Descriptors: (*Gadolinium 151, *Energy levels), Energy-level transitions, Internal conversion, K conversion, Multipoles.

For abstract, see NSA 30 04, number 11527.

JINR-P6-7856 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Reactions.
EXPERIMENTS ON SEARCH IN NATURE FOR SPONTANEOUSLY FISSIONING NUCLIDES OF SUPERHEAVY ELEMENTS. III. SEARCH FOR SUPERHEAVY ELEMENTS IN IRON--MANGANESE NODULES.
G. N. Flerov, V. Ya. Vyropaev, L. S. Getskin, A. G. Popeko, and N. K. Skobelev. 1974, 16p
In Russian. U.S. Sales Only.

Descriptors: (*Trans 104 elements, *Natural occurrence), (*Element 112, *Spontaneous fission), (*Element 113, Spontaneous fission), (*Element 114, Spontaneous fission), Element 115, Iron, Manganese, Seas.

For abstract, see NSA 30 05, number 14322.

KAPL-M-7323 PC$6.50/MF$2.25
Knolls Atomic Power Lab., Schenectady, N.Y.
REICH AND MOORE MULTILEVEL ANALYSIS OF EXP 233 U NEUTRON CROSS SECTIONS.
J. T. Reynolds, and R. G. Stieglitz. 29 Jun 73, 66p
Contract W-31-109-eng-52

Descriptors: (*Uranium 233, Neutron reactions), (*Neutron reactions, *Elastic scattering), (*Uranium 234, *Energy levels), Level widths, Multilevel analysis, Reich-moore formula, Resonance, Spin, Cross sections, Epithermal neutrons, Ev range 01-10, Ev range 10-100, Excitation functions, Fission, Milli ev range, Resonance integrals, Total cross sections, Capture, Gamma radiation.

For abstract, see NSA 30 04, number 11584.

KFK-1917 PC$4.75/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Neutronenphysik und Reaktortechnik.
CALCULATION OF EXP 237 NP AND EXP 241 AM ABSORPTION RATES IN REACTOR IRRADIATIONS.
J. Klunker. Feb 74, 32p
In German. U.S. Sales Only.

Descriptors: (*Neptunium 237, Neutron reactions), (*Americium 241, Neutron reactions), (*Neutron reactions, *Resonance integrals), Boundary conditions, Cylinders, Epithermal neutrons, Neutron spectra, Neutron transport, Rods, Self-shielding, Thermal neutrons.

For abstract, see NSA 30 04, number 11585.

KFK-1938 PC$4.25/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Experimentelle Kernphysik.
MULTIPLE SCATTERING OF GAMMA RAYS ON FERROMAGNETIC PLATES.
P. Bock. Apr 74, 25p
In German. U.S. Sales Only.

Descriptors: (*Metals, Photon collisions), (*Photon collisions, *Multiple scattering),

(*Computer codes, *D codes), Cross sections, Electrons, Faraday effect, Gamma radiation, Magnetic fields, Photons, Polarization, Scattering.

For abstract, see NSA 30 05, number 14737.

KFK-1950 PC$19.00/MF$2.25
Gesellschaft fuer Kernforschung m.b.H., Karlsruhe (F.R. Germany).
REPORT ON RESEARCH AND DEVELOPMENT FOR THE YEAR 1973.
Feb 74, 316p
In German. U.S. Sales Only.

Descriptors: (*Nuclear physics, *Research programs), (*Reactors, Research programs), (*Radiochemistry, Research programs), (*Hot atom chemistry, Research programs), Data processing, Decontamination, Karlsruhe cyclotron, Medicine, Radiation protection, Radioisotopes, Reactor kinetics, Reactor operation.

For abstract, see NSA 30 04, number 11586.

LBL-2640 PC$8.75/MF$2.25
California Univ., Berkeley Lawrence Berkeley Lab.
EXPLOITATION OF THE SMALL PION MASS IN MULTI-REGGE THEORY.
R. Shankar. 26 Apr 74, 112p
Contract W-7405-eng-48

Descriptors: (*Pions, *Mass), (*Regge poles, Pions), Correlations, Cross sections, Diagrams, Diffraction models, Exchange degeneracy, Exclusive interactions, Feynman diagram, Inclusive interactions, Pomeranchuk particles, Scattering amplitudes, Singularity.

For abstract, see NSA 30 05, number 13853.

LBL-3015 PC$4.00/MF$2.25
California Univ., Berkeley Lawrence Berkeley Lab.
BARYON--ANTIBARYON THRESHOLD RESONANCES.
G. F. Chew, and J. Koplik. 6 May 74, 15p CONF-740713-6
Contract W-7405-eng-48

Descriptors: (*Hadron-hadron interactions, Resonance particles), (*Electron-positron interactions, *Annihilation), (*Resonance particles, *Particle production), Antiparticles, Antiprotons, Baryons, Cross sections, Elastic scattering, Energy levels, Exchange interactions, Gev range 01-10, Hadrons, Ope model, Peripheral collisions, Pion-pion interactions, Proton-proton interactions, Quantum numbers, Resonance, Threshold energy, Total cross sections.

For abstract, see NSA 30 05, number 14000.

LNF-73-11 PC$5.50/MF$2.25
Comitato Nazionale per l'Energia Nucleare, Frascati (Italy). Laboratori Nazionali di Frascati.
ANALYSIS OF THE MEASUREMENT OF THE SINGLE PHOTOPRODUCTION COLLISION CROSS SECTION. PART III. PI EXP - OF THE 500 MEV THRESHOLD.
F. Patriarca. 3 Apr 73, 48p
In Italian. U.S. Sales Only.

Descriptors: (*Pions minus, *Photoproduction), (*Photon-proton interactions, *Total cross sections), Cross sections, Pions plus, Statistics, Tables.

For abstract, see NSA 30 04, number 10966.

LYCEN-7401 PC$6.50/MF$2.25
Lyon-1 Univ., 69 - Villeurbanne (France). Inst. de Physique Nucleaire.
ANNUAL REPORT, 1973.
1974, 69p
In French. U.S. Sales Only.

Descriptors: (*Nuclear physics, *Research programs), (*Nuclear reaction kinetics, Research programs), (*Nuclear chemistry, Research programs), (*Nuclear structure, Research programs), Nuclear reactions, Radioactivity, Spectroscopy.

For abstract, see NSA 30 04, number 11489.

NAL-CONF-73-25-EXP PC$4.50/MF$2.25
National Accelerator Lab., Batavia, Ill.
PP INTERACTIONS AT 205 GEV/C.
S. Barish, Y. Cho, and D. Colley. Jun 73, 22p CONF-730320-4

Descriptors: (*Proton-proton interactions, *Inclusive interactions), Bubble chambers, Charged particles, Correlations, Cross sections, Diffraction models, Distribution, Gev range 100-1000, Linear momentum, N resonances, Particle production, Pions minus, Pions plus, Protons.

For abstract, see NSA 30 04, number 10997.

NAL-CONF-73-28-THY-EXP PC$4.00/MF$2.25
National Accelerator Lab., Batavia, Ill.
IMPACT PICTURE FOR STRONG INTERACTIONS.
J. K. Walker. Apr 73, 18p CONF-730334-11

Descriptors: (*Kaon-proton interactions, *Impact parameter), (*Pion-proton interactions, Impact parameter), (*Proton-antiproton interactions, Impact parameter), (*Proton-proton interactions, Impact parameter), Differential cross sections, Diffraction models, Elastic scattering, Energy dependence, Gev range 10-100, Particle models, Scattering amplitudes, Total cross sections.

For abstract, see NSA 30 04, number 11204.

NAL-CONF-73-67-THY-EXP PC$4.00/MF$2.25
National Accelerator Lab., Batavia, Ill.
REVIEW OF LARGE TRANSVERSE MOMENTUM PHENOMENA IN HADRON COLLISIONS.
J. K. Walker. Sep 73, 15p CONF-730841-3

Descriptors: (*Proton-proton interactions, *Transverse momentum), Energy, Hadrons, Multiplicity, Particle production, Photons, Reviews, Scale invariance.

For abstract, see NSA 30 04, number 10998.

NAL-CONF-73-68-EXP PC$4.00/MF$2.25
National Accelerator Lab., Batavia, Ill.
DIFFRACTION DISSOCIATION IN PP INTERACTIONS AT NAL.
J. Whitmore. Sep 73, 5p CONF-730837-13

Descriptors: (*Proton-proton interactions, *Diffraction models), Boundary conditions, Bubble chambers, Cross sections, Distribution, Exchange interactions, Gev range 100-1000, Linear momentum, Missing mass, Multiplicity, Particle production, Pomeranchuk particles, Reviews, Time dependence.

For abstract, see NSA 30 04, number 10999.

NAL-CONF-74-26-THY PC$4.25/MF$2.25
National Accelerator Lab., Batavia, Ill.
RISING TOTAL CROSS SECTION AND LARGE TRANSVERSE MOMENTUM PHENOMENA, TWO TOPICAL QUESTIONS AT VERY HIGH ENERGIES.
M. Jacob. Feb 74, 24p CONF-740201-5

Descriptors: (*Proton-proton interactions, *Total cross sections), Boundary conditions, Reviews, Transverse momentum.

For abstract, see NSA 30 05, number 13817.

NAL-CONF-74-39-THY PC$6.00/MF$2.25
Institute for Advanced Study, Princeton, N.J.
ACCELERATOR NEUTRINO PHYSICS, PRESENT AND FUTURE: A REVIEW FOR THEORISTS AND EXPERIMENTALISTS.
S. L. Adler. 1974, 58p CONF-740334-1

Descriptors: (*Neutrino-nucleon interactions, *Reviews), (*Neutrino reactions, Reviews), Conservation laws, Exclusive interactions, Gauge invariance, Inclusive interactions, Leptons, Parton model, Quark model, Scale invariance, Symmetry breaking, V-a theory, Weak interactions.

For abstract, see NSA 30 05, number 13920.

NAL-CONF-74-43-THY PC$4.00/MF$2.25
National Accelerator Lab., Batavia, Ill.
NOTES ON CHARMED PARTICLE SEARCHES IN NEUTRINO EXPERIMENTS.
M. K. Gaillard. Apr 74, 11p CONF-740418-1

Descriptors: (*Charm particles, *Neutrino reactions), Branching ratio, Leptons, Mass, Particle production, Strangeness, Sum rules, Threshold energy.

For abstract, see NSA 30 05, number 13921.

NP-20026 PC$4.25/MF$2.25
Helsinki Univ. (Finland). Research Inst. for Theoretical Physics.
WHERE DO DIFFRACTIVE NUCLEONS GO.
K. Kajantie, P. V. Ruuskanen, and S. Sohlo. Feb 74, 24p
U.S. Sales Only.

Descriptors: (*Proton-proton interactions, *Diffraction models), (*N resonances, *Decay), Correlations, Distribution, Excitation, Interference, Nova model, Particle production, Pion-nucleon interactions, Pions, Pomeranchuk particles, Protons, Reaction kinetics.

For abstract, see NSA 30 05, number 13818.

NP-20027 PC$4.00/MF$2.25
Helsinki Univ. (Finland). Research Inst. for Theoretical Physics.
LONG RANGE CORRELATIONS IN THE PIONIZATION COMPONENT.
K. Kajantie, and P. V. Ruuskanen. Mar 74, 16p
U.S. Sales Only.

Descriptors: (*Proton-proton interactions, *Pionization), Correlation functions, Correlations, Elastic scattering, Energy spectra, Interaction range, Mesons, Multiplicity, Particle models, Particle production, Pions, Protons.

For abstract, see NSA 30 05, number 14018.

NP-20028 PC$4.00/MF$2.25
Helsinki Univ. (Finland). Dept. of Nuclear Physics.
CABIBBO UNIVERSALITY, RENORMALIZATION AND THE Z VECTOR BOSON MASS.
M. Roos. 11 Dec 73, 17p

Descriptors: (*Intermediate vector bosons, *Mass), (*Kaons plus, *Leptonic decay), Boundary conditions, Boundary conditions, Cabibbo angle, Electric charges, Emission, Form factors, Ft value, Hyperons, Integrals, Positrons, Quark model, Quarks, Renormalization.

For abstract, see NSA 30 05, number 13922.

NP-20029 PC$5.00/MF$2.25
Helsinki Univ. (Finland). Dept. of Nuclear Physics.
PION FORM FACTOR FROM INELASTIC PI PI SCATTERING.
M. Roos. 10 Dec 73, 39p
U.S. Sales Only.

Descriptors: (*Pion-pion interactions, *Scattering amplitudes), (*Pions, *Form factors), Annihilation, Electron-positron interactions, Electroproduction, Partial waves, Particle radii, Phase shift, Pions minus, Pions plus, Time dependence, Virtual particles.

For abstract, see NSA 30 05, number 13982.

NP-20030 PC$4.75/MF$2.25
AN SSSR, Moscow. Fizicheskij Inst.
SUM RULES IN THE RANDOM PHASE APPROXIMATION.
S. F. Semenko. 1974, 32p
In Russian. U.S. Sales Only.

Descriptors: (*Random phase approximation, *Sum rules), Anisotropy, Collective model, Excitation, Hamiltonians, Isospin, Mathematical operators, Multipoles, Nuclear structure, Particle models, Residual interactions, Resonance, Spin, Surfaces.

For abstract, see NSA 30 05, number 14337.

NP-20032 PC$4.00/MF$2.25
Helsinki Univ. (Finland). Research Inst. for Theoretical Physics.
CONSTITUENTS IN HADRONS WITH A SPECIFIC SU(3) STRUCTURE CAN GIVE NEW PREDICTIONS IN AGREEMENT WITH DATA.
N. A. Toernqvist. 1974, 11p
U.S. Sales Only.

Descriptors: (*Hadron-hadron interactions, *Particle models), (*Hadrons, *Particle structure), Boundary conditions, Isospin, Scattering amplitudes, Su-3 groups.

For abstract, see NSA 30 05, number 13944.

NP-20034 PC$4.25/MF$2.25
Helsinki Univ. (Finland). Dept. of Physics.
INVESTIGATION OF EXCITED STATES IN EXP 32 S BY THE EXP 31 P(P, GAMMA) EXP 32 S REACTION.
M. Viitasalo, and I. Forsblom. 15 Feb 74, 22p
U.S. Sales Only.

Descriptors: (*Sulfur 32, *Energy levels), (*Phosphorus 31, Proton reactions), (*Proton reactions, *Capture), Parity, Resonance, Spin, Branching ratio, Energy-level transitions, Mixing ratio, Multipolarity, Angular distribution, Gamma radiation, Kev range 100-1000, Mev range 01-10.

For abstract, see NSA 30 05, number 14218.

NP-20035 PC$4.25/MF$2.25
Helsinki Univ. (Finland). Dept. of Physics.
ENERGY LEVELS OF EXP 54 MN.
T. Weckstroem, B. Fant, I. Forsblom, and M. Viitasalo. 28 Feb 74, 22p
U.S. Sales Only.

Descriptors: (*Manganese 54, *Energy levels), (*Chromium 53, Proton reactions), (*Proton reactions, *Capture), Parity, Resonance, Spin, Branching ratio, Energy-level transitions, Excitation functions, Gamma radiation, Mev range 01-10, Q-value.

For abstract, see NSA 30 05, number 14235.

NP-20042 PC$8.75/MF$2.25
Oslo Univ. (Norway). Fysisk Institutt.
PROPERTIES OF LEVELS IN EXP 35 CL STUDIED BY MEANS OF THE EXP 32 S(ALPHA ,P GAMMA) EXP 35 CL REACTION.
F. Ingebretsen. 1972, 115p
U.S. Sales Only.

Descriptors: (*Chlorine 35, *Energy levels), Angular correlation, Bound state, Branching ratio, Doppler effect, Energy-level transitions, Lifetime, Mixing ratio, Multipolarity, Multipoles, Nilsson-mottelson model, Nuclear structure, Parity, Shell models, Spin.

For abstract, see NSA 30 05, number 14219.

ORNL-TM-4544 PC$8.50/MF$2.25
Oak Ridge National Lab., Tenn.
GAMMA-RAY PRODUCTION DUE TO NEUTRON INTERACTIONS WITH MAGNESIUM FOR INCIDENT NEUTRON ENERGIES BETWEEN 0.8 AND 20 MEV: TABULATED DIFFERENTIAL CROSS SECTIONS.
J. K. Dickens, T. A. Love, and G. L. Morgan. May 74, 111p
Contract W-7405-eng-26

Descriptors: (*Magnesium, *Neutron reactions), Data, Differential cross sections, Energy dependence, Energy spectra, Fast neutrons, Gamma radiation, Gamma spectra, Kev range 100-1000, Mev range 01-10, Mev range 10-100, Tables.

For abstract, see NSA 30 04, number 11417.

ORNL-TM-4589 PC$4.50/MF$2.25
Oak Ridge National Lab., Tenn.
REPORT TO THE U.S. NUCLEAR DATA COMMITTEE.
F. G. Perey. Jun 74, 30p
Contract W-7405-eng-26

Descriptors: (*Nuclear physics, *Research programs), Capture, Charged-particle reactions, Cross sections, Data, Gamma radiation, Neutron reactions, Neutron transport, Nuclear reactions, Scattering.

For abstract, see NSA 30 04, number 11491.

ORNL-TM-4599 PC$5.50/MF$2.25
Oak Ridge National Lab., Tenn.
REVIEW OF HEAVY-ION FUSION CROSS SECTION RESULTS.
F. Plasil. Jun 74, 48p
Contract W-7405-eng-26

Descriptors: (*Heavy ion reactions, Compound-nucleus reactions), (*Fusion reactions, *Reviews), (*Compound-nucleus reactions, Reviews), Angular momentum, Cross sections, Fission, Measuring methods, Nuclear reaction kinetics, Potential energy.

For abstract, see NSA 30 04, number 11492.

ORO-2408-73 PC$4.50/MF$2.25
North Carolina Univ., Chapel Hill.
STUDIES OF NUCLEAR PROCESSES. PROGRESS REPORT, JUNE 1, 1973--MAY 31, 1974.
T. B. Clegg, E. J. Ludwig, E. Merzbacher, S. M. Shafroth, and W. J. Thompson. 29p
Contract AT(40-1)-2408

Descriptors: (*Nuclear physics, *Research programs), (*Van de graaff accelerators, Research programs), (*Cyclic accelerators, Research programs), Beam optics, Deuteron reactions, Helium 3 reactions, Ion sources, Ion-atom collisions, Ionization, North carolina, Nuclear theory, Polarized beams, Programming, Proton reactions.

For abstract, see NSA 30 04, number 11493.

ORO-2504-188 PC$10.25/MF$2.25
Maryland Univ., College Park Dept. of Physics and Astronomy.
WIDE-GAP SPARK CHAMBER STUDY OF K/SUB L/ EXP 0 IMPLIES PI EXP +- + E EXP +- + NU DECAY. TECHNICAL REPORT NO. 73-033.
L. Wang. Aug 71, 141p

Descriptors: (*Kaons neutral long-lived, *Leptonic decay), Electrons, Emission, Energy dependence, Form factors, Neutrinos, Pions minus, Pions plus, Positrons, Spark chambers.

For abstract, see NSA 30 04, number 10979.

ORO-2504-191 PC$10.50/MF$2.25
Maryland Univ., College Park Dept. of Physics and Astronomy.
MEASUREMENT OF THE CROSS SECTION FOR PI EXP + P IMPLIES PI EXP + PI EXP + N NEAR THRESHOLD. TECHNICAL REPORT NO. 73-040.
J. H. Crouch. Feb 74, 150p

Descriptors: (*Pion-proton interactions, *Cross sections), Mev range 100-1000, Neutrons, Particle production, Pions plus.

For abstract, see NSA 30 04, number 11022.

ORO-2504-213 PC$11.75/MF$2.25
Maryland Univ., College Park Dept. of Physics and Astronomy.
MEASUREMENTS OF THE BETA-DECAY PROPERTIES OF THE LAMBDA HYPERON. TECHNICAL REPORT NO. 74-044.
C. N. Katz. Dec 73, 172p

Descriptors: (*Lambda particles, *Leptonic decay), Antineutrinos, Axial-vector currents, Branching ratio, Corrections, Electrons, Emission, Form factors, Positrons, Protons, Vectors.

For abstract, see NSA 30 04, number 10980.

ORO-2504-214 PC$9.00/MF$2.25
Maryland Univ., College Park Dept. of Physics and Astronomy.
K EXP + P INTERACTION AT 473 MEV/C AND 590 MEV/C. TECHNICAL REPORT NO. 74-70.
J. R. Fram. Dec 73, 118p

Descriptors: (*Kaon-proton interactions, *Elastic scattering), Angular distribution, Bubble chambers, Cross sections, Interference, Kaons plus, Linear momentum, Mev range 100-1000, Phase shift, S waves, Scattering amplitudes, Total cross sections.

For abstract, see NSA 30 04, number 11023.

ORO-3624-14 PC$4.50/MF$2.25
North Carolina State Univ., Raleigh.
NORTH CAROLINA STATE UNIVERSITY NUCLEAR STRUCTURE RESEARCH AT THE TRIANGLE UNIVERSITIES NUCLEAR LABORATORY. PROGRESS REPORT.
L. W. Seagondollar, A. W. Waltner, G. E. Mitchell, D. R. Tilley, and C. R. Gould. 31 May 74, 28p
Contract AT(40-1)-3624

Descriptors: (*Nuclear structure, *Research programs), (*Van de graaff accelerators, *Operation), Accelerator facilities, Charged-particle reactions, Cross sections, Energy-level transitions, Fine structure, Intermediate mass nuclei, Isobaric analogs, Light nuclei, Neutron reactions, North carolina, Proton reactions, X radiation.

For abstract, see NSA 30 04, number 11449.

ORO-3948-6 PC$4.00/MF$2.25
Houston Univ., Tex.
PION INTERACTIONS AT MEDIUM ENERGIES. PROGRESS REPORT, SEPTEMBER 1, 1973--AUGUST 31, 1974.
J. C. Allred, and B. W. II Mayes. 1974, 14p
Contract AT(40-1)-3948

Descriptors: (*Pion reactions, *Research programs), Delta-1236 resonances, Pions minus, Pions plus, Scattering amplitudes, Total cross sections.

For abstract, see NSA 30 04, number 11358.

ORO-4317-38 PC$4.00/MF$2.25
Maryland Univ., College Park Dept. of Physics and Astronomy.
QUALITATIVE FEATURES OF PAULI BREAK-UP FROM THE CONFIGURATION SPACE VIEWPOINT. TECHNICAL REPORT NO. 74-092.
B. L. Gambhir, and J. J. Griffin. Apr 74, 13p

Descriptors: (*Deuteron reactions, *Breakup reactions), Mathematical space, Matrix elements, Pauli principle, Proton-deuteron interactions, Proton-neutron interactions.

For abstract, see NSA 30 04, number 11608.

ORO-4317-39 PC$4.00/MF$2.25
Maryland Univ., College Park Dept. of Physics and Astronomy.
DEPENDENCE OF SHELL EFFECTS ON NUCLEAR TEMPERATURE. TECHNICAL REPORT 74-098.
M. G. Mustafa. May 74, 13p

Descriptors: (*Lead 208, *Shell models), (*Plutonium 242, Shell models), Corrections, Nuclear temperature, Temperature dependence.

For abstract, see NSA 30 04, number 11528.

PATENT-3 778 627 Not available NTIS
Atomic Energy Commission, Washington, D.C.
HIGH INTENSITY, PULSED THERMAL NEUTRON SOURCE.
Patent,
John M. Carpenter. Filed 17 Apr 73, patented 11 Dec 73, 8p PAT-APPL-351 893
Government-owned invention available for licensing. Copy of patent available available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Neutron sources, *Patents, Pulse generators, Thermal neutrons, Moderators.
Identifiers: PAT-CL-250-499.

The invention relates generally to neutron sources and more particularly to pulsed thermal neutron sources. Specifically, this invention is concerned with a novel apparatus for slowing down fast neutrons in such a manner as to create highly intense pulses of thermal neutrons.

RL-74-50 PC$4.25/MF$2.25
Science Research Council, Chilton (UK). Rutherford Lab.
SOLVABLE ONE DIMENSIONAL MODELS OF PARTICLE PRODUCTION.
R. D. Peccei. Apr 74, 21p
U.S. Sales Only.

Descriptors: (*Particle production, Cluster model), (*Multiperipheral model, Particle production), (*Cluster model, Particle production), (*Inclusive interactions, *Cross sections), Distribution, Exclusive interactions, Functionals, Particle models, Trajectories.

For abstract, see NSA 30 04, number 11054.

RL-74-56 PC$4.00/MF$2.25
Science Research Council, Chilton (UK). Rutherford Lab.; Deutsches Elektronen-Synchrotron (DESY), Hamburg (F.R. Germany).
ETA/SUB +-/ AND THE REACTION E EXP + E EXP - IMPLIES K EXP 0 ANTI K EXP 0 AT THE PHI-RESONANCE.
G. V. Dass. Apr 74, 14p
U.S. Sales Only.

Descriptors: (*Electron-positron interactions, *Cp invariance), Antikaons neutral, Decay, Distribution, Electroproduction, Kaons neutral, Phi-1019 resonances, Time dependence.

For abstract, see NSA 30 04, number 11095.

RL-74-63 PC$4.25/MF$2.25
Science Research Council, Chilton (UK). Rutherford Lab.
IS THE O EXP + NONET RESPECTABLE.
D. Morgan. Apr 74, 23p
U.S. Sales Only.

Descriptors: (*Meson resonances, *Decay), (*Delta-966 resonances, Decay), Multiplets, O groups, Parity, Particle decay, Resonance particles, Spin.

For abstract, see NSA 30 05, number 13983.

RL-74-65 PC$4.00/MF$2.25
Science Research Council, Chilton (UK). Rutherford Lab.
DEEP INELASTIC STRUCTURE FUNCTIONS OF THE PHOTON.
R. P. Worden. Apr 74, 20p
U.S. Sales Only.

Descriptors: (*Photons, *Structure functions), Diagrams, Dispersion relations, Electron-electron interactions, Electron-positron interactions, Electrons, Hadrons, Inelastic scattering, Light cone, Parton model, Photon collisions, Photon-photon interactions, Positrons, Quark model, Scale invariance, Storage rings.

For abstract, see NSA 30 05, number 13874.

RL-74-68 PC$4.50/MF$2.25
Science Research Council, Chilton (UK). Rutherford Lab.
WHAT A DOMINATING RHO AND WEAK EXOTICS CAN DO FOR PI PI SCATTERING NEAR THRESHOLD.
M. R. Pennington. May 74, 28p
U.S. Sales Only.

Descriptors: (*Pion-pion interactions, *Scattering amplitudes), Absorption, D waves, Exotic resonances, P waves, Rho-765 resonances, S waves, Scattering, Threshold energy, Vector dominance model.

For abstract, see NSA 30 05, number 13984.

RL-74-73 PC$4.25/MF$2.25
Science Research Council, Chilton (UK). Rutherford Lab.; Ecole Polytechnique, 75 - Paris (France); CEA Centre d'Etudes Nucleaires de Saclay, 91 - Gif-sur-Yvette (France).
STUDY OF THE Q ENHANCEMENT IN THE REACTION K EXP - P IMPLIES K EXP - PI EXP - PI EXP + P AT 14.3 GEV/C.
S. N. Tovey, J. D. Hansen, and K. Paler. 1974, 22p
U.S. Sales Only.

Descriptors: (*Kaon-proton interactions, *Partial waves), (*K resonances, *Decay), (*K-1240 resonances, *Decay amplitudes), (*K-1320 resonances, Decay amplitudes), Gev range 10-100, Kaons minus, Parity, Particle production, Pions minus, Pions plus, Protons, Spin.

For abstract, see NSA 30 05, number 13838.

RT/FI-(74)2 PC$4.00/MF$2.25
Comitato Nazionale per l'Energia Nucleare, Rome (Italy).
NUCLEAR DATA AND INTEGRAL MEASUREMENT CORRELATION FOR FAST REACTORS. STATISTICAL FORMULATION AND ANALYSIS OF METHOD: THE CONSISTENT APPROACH.
A. Gandini, M. Petilli, and M. Salvatores. Jan 74, 16p CONF-731015-8
U.S. Sales Only.

Descriptors: (*Fast reactors, *Reactor kinetics), (*Neutron reactions, *Group constants), Correlations, Cross sections, Statistics.

For abstract, see NSA 30 04, number 11349.

SLA-74-5153 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
ELECTRON TRANSPORT IN THE PRESENCE OF UNIFORM MAGNETIC FIELD.
J. A. Sr. Halbleib. 1974, 4p CONF-740707-5

Descriptors: (*Electrons, *Transport theory), (*Magnetic fields, *Charged-particle transport), Monte carlo method.

For abstract, see NSA 30 04, number 11661.

SLA-74-5154 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
ONE DIMENSIONAL MODEL OF COUPLED ELECTRON-PHOTON TRANSPORT.
J. A. Sr. Halbleib, and W. H. Vandevender. 1974, 4p CONF-740707-6

Descriptors: (*Photon transport, *Coupling), (*Charged-particle transport, Coupling), (*Computer codes, *T codes), Electrons.

For abstract, see NSA 30 04, number 11662.

SLL-74-12 PC$9.25/MF$2.25
Sandia Labs., Livermore, Calif.
SANDYL: A COMPUTER PROGRAM FOR CALCULATING COMBINED PHOTON--ELECTRON TRANSPORT IN COMPLEX SYSTEMS.
H. M. Colbert. May 74, 122p
Contract AT(29-1)-789

Descriptors: (*Computer codes, *S codes), (*Gamma transport theory, Computer codes), (*Charged-particle transport theory, Computer codes), (*Cascade showers, Computer codes), Charged-particle transport, Kev range, Mathematical space, Mev range, Monte carlo method, Photon transport, Time dependence.

For abstract, see NSA 30 04, number 11096.

UCD-34-P-191-6 PC$4.00/MF$2.25
California Univ., Davis Dept. of Physics.
U.C. DAVIS HIGH ENERGY PARTICLE PHYSICS RESEARCH. ANNUAL PROGRESS REPORT, FEBRUARY 1973--MARCH 1974.
J. Klems, W. Ko, R. L. Lander, D. E. Pellett, and P. M. Yager. Apr 74, 6p
Contract AT(04-3)-34

Descriptors: (*Scintillation counters, *Hodoscopes), (*Pion-proton interactions, *Research programs), (*Proton-proton interactions, Research programs), (*Pion-kaon interactions, Research programs), Distribution, Gev range 100-1000, Multiplicity, S waves.

For abstract, see NSA 30 05, number 13819.

UCRL-50400(Vol.2)(Rev.1) PC$13.60/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
BIBLIOGRAPHY OF THE EXPERIMENTAL DATA OF NEUTRON-INDUCED INTERACTIONS.
S. T. Perkins, D. E. Cullen, R. C. Haight, R. J. Howerton, and M. H. MacGregor. 1 Mar 74, 638p
Contract W-7405-eng-48

Descriptors: (*Neutron reactions, *Bibliographies), Cross sections.

For abstract, see NSA 30 04, number 11350.

UCRL-50400(Vol.7)(Pt.B) PC$13.60/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.

GRAPHICAL, EXPERIMENTAL DATA FOR MAJOR NEUTRON-INDUCED INTERACTIONS (Z > 55).
D. E. Cullen, R. C. Haight, R. J. Howerton, M. H. MacGregor, and S. T. Perkins. 1 Apr 74, 600p
Contract W-7405-eng-48

Descriptors: (*Intermediate mass nuclei, Neutron reactions), (*Heavy nuclei, Neutron reactions), (*Neutron reactions, *Capture), Cold neutrons, Cross sections, Data, Elastic scattering, Epithermal neutrons, Ev range, Excitation functions, Fast neutrons, Fission, Gamma radiation, Intermediate neutrons, Kev range, Mev range, Milli ev range, Tables, Thermal neutrons, Total cross sections.

For abstract, see NSA 30 04, number 11589.

UCRL-75693 PC$4.50/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
TESTING OF ENDF/B-IV-P EVALUATIONS WITH SDT-10 BENCHMARK PULSED SPHERES.
R. J. Howerton. 10 May 74, 30p

Descriptors: (*Nuclear data collections, *Reliability), Fast neutrons, Mev range 10-100, Monte carlo method, Neutron transport, Neutron transport theory, Pulsed neutron techniques, Spectra, Spheres.

For abstract, see NSA 30 04, number 11351.

UCSB-10-P-23-26 PC$4.00/MF$2.25
California Univ., Santa Barbara.
HIGH ENERGY USER GROUP AT SANTA BARBARA. PROGRESS REPORT, MAY 1973–MARCH 1974.
D. O. Caldwell. 1974, 13p
Contract AT(11-1)-Gen-10

Descriptors: (*High energy physics, *Research programs), Reviews.

For abstract, see NSA 30 04, number 10962.

UH-511-154-73 PC$4.00/MF$2.25
Hawaii Univ., Honolulu.
WEAK AND STRONG DECAYS OF BARYONS.
S. Pakvasa. May 73, 5p
Contract AT(04-3)-511

Descriptors: (*Baryons, *Decay), (*Hyperons, Decay), Strong interactions, Sum rules, Weak interactions.

For abstract, see NSA 30 04, number 11205.

20I. Plasma Physics

AD-783 511/9GA PC$4.00/MF$2.25
Science Applications Inc Albuquerque N Mex
HOLOGRAPHIC INTERFEROMETRY DEVELOPMENTS FOR DENSE PLASMAS.
Final rept. Jan 73-Jan 74,
Carl G. Murphy. 20 Feb 74, 88p Rept no. SAI-73-512-AQ DNA-3350F
Contract DNA001-73-C-0041

Descriptors: *Plasmas(Physics), *Holography, Gas discharges, Laser beams, Numerical analysis.
Identifiers: *Interferometric holography, *Laser produced plasmas, *Plasma diagnostics.

The report discusses the necessary parameters for producing interferograms by holography with special attention given to the case of diagnostics for laser-produced plasmas. The design of a dense plasma interferometric experiment is presented. (Author)

AD-783 590/3GA PC$8.50/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
PHYSICS AND TECHNOLOGY OF LOW TEMPERATURE PLASMA,
S. V. Dresvina. 18 Jun 74, 415p Rept no. FTD-MT-24-171-74
Edited machine trans. of mono. Fizika i Tekhnika Nizkotemperaturnoi Plazmy, n.p., 1972 p1-352, by Dean F.W. Koolbeck and Robert D. Hill.

Descriptors: *Plasmas(Physics), Gas discharges, Low temperature, Enthalpy, Gas dynamics, Translations, USSR.
Identifiers: Plasma diagnostics.

The book is devoted to the investigation of low-temperature plasma generated in high-frequency induction and arc plasmatrons. The physical and transport properties of low-temperature plasma and questions of its thermodynamics are discussed in detail. An account with comprehensive completeness is given of the optical, thermophysical, and gas-dynamic methods necessary for the investigation of plasma.

AD-783 780/0GA PC$3.00/MF$2.25
Air Force Academy Colo
LINEAR PARAMETRIC INSTABILITIES AT HIGH PUMP POWERS.
Interim rept. Feb 73-May 74,
Norman F. Roderick. Jul 74, 23p Rept no. USAFA-TR-74-12

Descriptors: *Plasma oscillations, Instability, Lasers, Heating, Dispersion relations.
Identifiers: Parametric instabilities, Plasma heating.

The linear parametric decay and oscillating two stream instabilities have been studied at high pump power for perturbations propagating oblique to the pump field. The electrostatic Vlasov Poisson system for a homogeneous two component plasma has been solved numerically to investigate the high frequency branches of these instabilities. Results show that the maximum growth rate of the oscillating two stream instability occurs oblique to the pump field for power levels above a critical value. (Modified author abstract)

AD-783 855/0GA PC$7.50/MF$2.25
Naval Postgraduate School Monterey Calif
BREAKDOWN PHENOMENA IN RARE AND IN MOLECULAR GASES USING PULSED CARBON DIOXIDE LASER RADIATION.
Master's thesis,
Peter Behrens. Jun 74, 89p

Descriptors: *Gas ionization, *Gas discharges, Air, Absorption(Physical), Emission spectra, Plasmas(Physics), Carbon dioxide lasers, Theses, Hydrogen, Nitrogen, Helium, Argon, Temperature, Density.
Identifiers: *Laser produced plasmas, Laser heating.

Light from an atmospheric pressure, double-discharge CO2 laser was focused in Ar, He, N2, H2, and air at pressures from 0.01 atm to 10 atm in order to produce optical breakdown. Measurements of the transmitted laser intensity were obtained and the properties of the resulting spark were studied by means of an open face camera and spectroscopic techniques. The threshold power density was discussed. The importance of loss terms other than electron diffusion loss was discussed. Emission spectra consisted of a strong continuum superimposed with strong lines due to neutral and ionized atoms. (Modified author abstract)

CLM-R-130 PC$4.00/MF$2.25
UKAEA Research Group, Abingdon. Culham Lab.
MEDUSA: A ONE-DIMENSIONAL NUMERICAL MODEL FOR LASER FUSION CALCULATIONS.
J. P. Christiansen, D. E. T. F. Ashby, and K. V. Roberts. Dec 73, 15p
U.S. Sales Only.

Descriptors: (*Laser-produced plasma, *One-dimensional calculations), (*Computer codes, *M codes), Compression, Thermonuclear reactions.

For abstract, see NSA 30 04, number 09330.

CLM-R-131 PC$5.00/MF$2.25
UKAEA Research Group, Abingdon. Culham Lab.
PROPAGATION OF SMALL AMPLITUDE COHERENT ELECTRON PLASMA WAVES IN Q-MACHINE PLASMA.
R. N. Franklin, S. M. Hamberger, G. Lampis, and G. J. Smith. Jan 74, 41p
U.S. Sales Only.

Descriptors: (*Plasma diagnostics, *Electron plasma waves), (*Plasma waves, Electron plasma waves), (*Q devices, Electron plasma waves), Collisionless plasma, Electron density, Electron temperature, Wave propagation.

For abstract, see NSA 30 04, number 09392.

COM-74-50665/0GA Not available NTIS
National Bureau of Standards, Boulder, Colo.
ELECTRON AND ION MOMENTUM TRANSFER FROM PLASMA ELECTRICAL CONDUCTIVITY IN A MAGNETIC FIELD.
Final rept.,
D. J. Albares. Aug 73, 7p
Pub. in Physics of Fluids, v16 n8 p1252-1258 Aug 73.

Descriptors: *Plasmas(Physics), Hall effect, Helium, Electrical resistivity, Ionic mobility, Momentum.
Identifiers: Helium plasma.

The electrical conductivity of a partially to strongly (Coulomb collision-dominated) ionized dc plasma in a dc magnetic field, was investigated at low frequency by two experimental methods, one using the Hall effect and the other a plasma interaction with an induced solenoidal electric field. Electron-ion and electron-atom momentum transfer collision frequencies and ion mobility in the magnetic field (ion slip) were inferred.

COO-2180-2 PC$4.00/MF$2.25
Brigham Young Univ., Provo, Utah.
MEASUREMENTS ON A SPHERICAL ELECTROSTATIC CONFINEMENT SYSTEM EMPLOYING SIX ION GUNS.
A. L. Gardner, D. M. Hatch, A. I. Y. Chan, and R. P. Evans. 4 Mar 74, 18p CONF-740316-5
Contract AT(11-1)-2180

Descriptors: (*Plasma, *Confinement), (*Plasma diagnostics, *Microwave radiation), (*Thermonuclear devices, *Electrostatics), Electron density, Ion beam injection, Ion sources, Spherical configuration.

For abstract, see NSA 30 04, number 09278.

COO-2180-3 PC$6.25/MF$2.25
Brigham Young Univ., Provo, Utah.
INSTRUMENTATION FOR CONTINUOUSLY RECORDING PLASMA-INDUCED FREQUENCY SHIFTS OF TWO MICROWAVE CAVITY RESONANCES.
R. P. Evans. Apr 74, 61p
Contract AT(11-1)-2180

Descriptors: (*Plasma diagnostics, *Microwave radiation), Cavity resonators, Resonance, Spherical configuration.

For abstract, see NSA 30 04, number 09304.

COO-2180-4 PC$4.00/MF$2.25
Brigham Young Univ., Provo, Utah Dept. of Physics and Astronomy.

STUDIES OF CHARGED-PARTICLE DISTRIBUTIONS IN AN ELECTROSTATIC CONFINEMENT SYSTEM. PROGRESS REPORT, AUGUST 1, 1972--MARCH 31, 1974.
A. L. Gardner. 1974, 10p
Contract AT(11-1)-2180

Descriptors: (*Plasma, *Confinement), (*Thermonuclear devices, *Electrostatics), Charged particles, Distribution, Electron density, Ion sources, Research programs.

For abstract, see NSA 30 04, number 09279.

COO-3077-49 PC$9.00/MF$2.25
New York Univ., N.Y. Courant Inst. of Mathematical Sciences.
THREE DIMENSIONAL COMPUTATION OF MAGNETOHYDRODYNAMIC EQUILIBRIUM OF TOROIDAL PLASMA WITHOUT AXIAL SYMMETRY.
O. L. Betancourt. Jun 74, 117p MF-67
Contract AT(11-1)-3077

Descriptors: (*Equilibrium plasma, *Magnetohydrodynamics), Aspect ratio, Stability, Three-dimensional calculations, Toroidal configuration.

For abstract, see NSA 30 04, number 09340.

COO-3086-27 PC$4.00/MF$2.25
Columbia Univ., New York.
RESEARCH IN COMPUTATIONAL PLASMA PHYSICS. PROGRESS REPORT, JUNE 1, 1973--MAY 31, 1974.
C. K. Chu. 1974, 13p
Contract AT(11-1)-3086

Descriptors: (*Plasma simulation, *Research programs), Boundary conditions, Computer codes, Numerical solution, Plasma, Toroidal theta pinch devices, Two-dimensional calculations.

For abstract, see NSA 30 04, number 09317.

COO-3086-28 PC$9.75/MF$2.25
Columbia Univ., New York Plasma Lab.
NUMERICAL SIMULATION OF SHOCK-HEATED PLASMA WITH A MAGNETIC DAM.
A. M. M. Todd. 1974, 135p

Descriptors: (*Heating, Shock heating), (*Shock heating, *Simulation), High-beta plasma, Magnetic fields, Magnetohydrodynamics, Numerical solution, Plasma.

For abstract, see NSA 30 04, number 09280.

EUR-CEA-FC-711 PC$6.00/MF$2.25
Association Euratom-CEA, Centre d'Etudes Nucleaires de Fontenay-aux-Roses, 92 (France). Groupe de Recherches sur la Fusion Controlee.
POSSIBILITY OF HEATING TFR PLASMAS BY THE ABSORPTION OF FAST MAGNETOHYDRODYNAMIC WAVES.
J. Adam. Oct 73, 59p
In French. U.S. Sales Only.

Descriptors: (*Tfr tokamak, *High-frequency heating), (*Plasma heating, *Magnetoacoustic waves), Antennas, Coupling, Cyclotron frequency, Deuterium ions, Dispersion relations, Excitation.

For abstract, see NSA 30 05, number 12431.

IPP-IV-64 PC$4.50/MF$2.25
Max-Planck-Institut fuer Plasmaphysik, Garching/Muenchen (F.R. Germany).
PLASMA CAPACITOR WITH ION ACOUSTIC WAVES.
F. Leuterer. Jan 74, 26p
U.S. Sales Only.

Descriptors: (*Homogeneous plasma, Capacitors), (*Capacitors, *Ion acoustic waves), Boltzmann statistics, Electron density, Magnetic fields.

For abstract, see NSA 30 04, number 09310.

IPP-1-138 PC$4.50/MF$2.25
Max-Planck-Institut fuer Plasmaphysik, Garching/Muenchen (F.R. Germany).
DYNAMICS OF TOROIDAL HIGH- BETA STELLARATORS.
J. Neuhauser. Dec 73, 27p
U.S. Sales Only.

Descriptors: (*Stellarators, *Plasma waves), Alfven waves, Coupling, Damping, High-beta plasma, Plasma heating, Toroidal configuration.

For abstract, see NSA 30 04, number 09394.

IPP-6-122 PC$4.00/MF$2.25
Max-Planck-Institut fuer Plasmaphysik, Garching/Muenchen (F.R. Germany).
TURBULENT HEATING AND QUENCHING OF ION SOUND INSTABILITY.
C. T. Dum, R. Chodura, and D. Biskamp. Jan 74, 16p IPP-1-142
U.S. Sales Only.

Descriptors: (*Plasma heating, *Turbulent heating), (*Plasma instability, *Ion acoustic waves), Computer calculations, Electron density, Instability growth rates, Simulation, Stability, Two-dimensional calculations.

For abstract, see NSA 30 04, number 09282.

IPP-6-123 PC$4.00/MF$2.25
Max-Planck-Institut fuer Plasmaphysik, Garching/Muenchen (F.R. Germany).
CONTRIBUTION TO THE EFFICIENT SOLUTION OF EXTENSIVE SYMBOLIC COMPUTATIONS.
W. Kerner, and J. Steuerwald. Mar 74, 20p
U.S. Sales Only.

Descriptors: (*Plasma, *Kinetic equations), Computer calculations, Magnetohydrodynamics, Mathematics, Numerical solution.

For abstract, see NSA 30 04, number 09319.

LA-5466-MS PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
VACUUM ULTRAVIOLET EMISSION FROM A NEON-SEEDED THETA PINCH.
D. B. Thomson, A. G. Bailey, and R. Jr. Engleman. Mar 74, 19p
Contract W-7405-eng-36

Descriptors: (*Linear theta pinch devices, *Far ultraviolet radiation), Deuterium, Emission, Helium, Neon, Plasma.

For abstract, see NSA 30 04, number 09311.

LRP-78/74 PC$4.75/MF$2.25
Ecole Polytechnique Federale, Lausanne (Switzerland).
DIAMAGNETIC MEASUREMENTS OF A THETA PINCH.
R. Keller. Mar 74, 34p
In French. U.S. Sales Only.

Descriptors: (*Theta pinch, *Plasma diamagnetism), Adiabatic compression heating, Beta ratio, Deuterium, Ionization, Shock waves.

For abstract, see NSA 30 05, number 12453.

MATT-Trans-109 PC$5.00/MF$2.25
BASIC FACTORS DEFINING THE BEHAVIOR OF AN IMPURITY IN A TOKAMAK PLASMA.
V. I. Gervids, and V. A. Krupin. 1973, 38p
Translated from Russian.

Descriptors: (*Tokamak devices, *Impurities), (*Plasma, Impurities), Carbon, Confinement, Distribution, Electron density, Electron temperature.

For abstract, see NSA 30 04, number 09284.

MATT-1033 PC$4.00/MF$2.25
Princeton Univ., N.J. Plasma Physics Lab.
EFFECTS OF BEAM-PLASMA THERMONUCLEAR REACTIONS DURING ION-BEAM HEATING TO IGNITION.
D. L. Jassby, and H. P. Furth. Mar 74, 7p
Contract AT(11-1)-3073

Descriptors: (*Plasma heating, *Beam injection heating), (*Tokamak devices, Beam injection heating), Alpha particles, Beam-plasma systems, Deuterium, Deuterons, Ion beams, Thermonuclear reactions, Tritium, Tritons.

For abstract, see NSA 30 04, number 09283.

NP-20000 PC$4.25/MF$2.25
AN SSSR, Moscow. Fizicheskij Inst.
STOCHASTIC HEATING OF PLASMA DURING GROWTH OF INSTABILITIES IN LANGMUIR TURBULENCE.
F. Kh. Khakimov, and V. N. Tsytovich. 1972, 23p
In Russian. U.S. Sales Only.

Descriptors: (*Plasma heating, *Turbulent heating), (*Plasma instability, Turbulent heating), Instability growth rates, Langmuir frequency, One-dimensional calculations, Stochastic processes.

For abstract, see NSA 30 04, number 09285.

NP-20002 PC$4.00/MF$2.25
AN SSSR, Leningrad. Fiziko-Tekhnicheskij Inst.
ROLE OF COLLISIONS IN ELECTROMAGNETIC WAVE ABSORPTION AT FREQUENCIES NEAR THE LOWER HYBRID RESONANCE.
B. V. Galaktionov, V. V. D'yachenko, M. M. Larionov, and O. N. Shcherbinin. 1973, 18p
In Russian. U.S. Sales Only.

Descriptors: (*Plasma heating, *Electromagnetic radiation), (*Tokamak devices, Electromagnetic radiation), Absorption, Collisions, Efficiency, Hybrid resonance.

For abstract, see NSA 30 04, number 09286.

NP-20005 PC$4.00/MF$2.25
AN SSSR, Leningrad. Fiziko-Tekhnicheskij Inst.
INVESTIGATION OF THE DRIFT WAVE SPECTRA IN THE PLASMA, GENERATED BY HF POWER AT THE LOWER HYBRID RESONANCE.
Yu. F. Baranov, D. G. Bulyginskii, M. I. Vil'dzhyunas, B. V. Galaktionov, and N. V. Shustova. 1973, 17p
In Russian. U.S. Sales Only.

Descriptors: (*Plasma instability, *Drift instability), Argon, Electromagnetic fields, Hybrid resonance, Plasma waves.

For abstract, see NSA 30 04, number 09342.

NP-20006 PC$4.00/MF$2.25
AN SSSR, Moscow. Fizicheskij Inst.
PARAMETRIC HEATING OF ELECTRONS IN MAGNETIZED PLASMA.
N. E. Andreev, G. M. Batanov, and K. A. Sarksyan. 1973, 11p
In Russian. U.S. Sales Only.

Descriptors: (*Plasma heating, *High-frequency heating), (*Plasma instability, *Parametric instabilities), Distribution functions, Electron temperature, Excitation, Magnetic fields.

For abstract, see NSA 30 04, number 09287.

NP-20007 PC$4.00/MF$2.25
AN SSSR, Moscow. Fizicheskij Inst.
SUPERHIGH FREQUENCY METHOD FOR HEATING ELECTRONS IN THE TOR-1 STELLERATOR.
D. K. Akulina, Z. D. Andryukhina, A. D. Smirnova, and Yu. V. Khol'nov. 1973, 16p
In Russian. U.S. Sales Only.

Descriptors: (*Tor devices, *High-frequency heating), (*Plasma heating, High-frequency heating), Confinement, Electron temperature, Joule heating.

For abstract, see NSA 30 04, number 09288.

NP-20008 PC$5.25/MF$2.25
AN SSSR, Moscow. Fizicheskij Inst.
NONLINEAR ION-ACOUSTIC OSCILLATIONS IN NON-ISOTHERMAL PLASMA WITH CURRENTS NEAR THE INSTABILITY THRESHOLD.
E. Abu-Asali, B. A. Al'terkop, and A. A. Rukhadze. 1973, 43p
In Russian. U.S. Sales Only.

Descriptors: (*Plasma waves, Ion acoustic waves), (*Ion acoustic waves, *Excitation), Electric currents, Nonlinear problems, Plasma instability.

For abstract, see NSA 30 04, number 09397.

NP-20017 PC$4.00/MF$2.25
Sydney Univ. (Australia). School of Physics.
WILLS PLASMA PHYSICS DEPARTMENT TWENTY-SIXTH SIX-MONTHLY PROGRESS REPORT, 1 JULY--31 DECEMBER 1973.
1973, 9p PR-26
U.S. Sales Only.

Descriptors: (*Plasma, *Research programs), Cyclotron frequency, Ions, Plasma production, Rotation, Shock waves.

For abstract, see NSA 30 04, number 09312.

ORNL-TM-4584 PC$4.00/MF$2.25
Oak Ridge National Lab., Tenn.
STABILITY OF MAGNETICALLY-CONFINED, HIGH-BETA PLASMA.
G. E. Guest, C. L. Hedrick, and D. B. Nelson. Jun 74, 17p
Contract W-7405-eng-26

Descriptors: (*High-beta plasma, *Plasma instability), Boltzmann-vlasov equation, Guiding-center approximation, Instability growth rates, Magnetic fields, Maxwell equations, Plasma waves.

For abstract, see NSA 30 04, number 09343.

ORNL-TM-4585 PC$5.75/MF$2.25
Oak Ridge National Lab., Tenn.
ENERGY CONTAINMENT AND SCALING IN TOKAMAKS: (THE PHYLOGENY OF A TOKAMAK DISCHARGE).
J. F. Clarke. May 74, 55p CONF-731009-8
Contract W-7405-eng-26

Descriptors: (*Plasma, *Confinement), (*Tokamak devices, *Energy balance), (*Ormak devices, Energy balance), Electron density, Ion density, Scaling laws.

For abstract, see NSA 30 04, number 09289.

ORO-2598-7 PC$4.00/MF$2.25
Tennessee Univ., Knoxville Dept. of Physics.
INSTABILITIES DUE TO ANISOTROPIC VELOCITY DISTRIBUTIONS. PROGRESS REPORT, 1 JUNE 1973--1 JUNE 1974.
E. G. Harris. 1974, 13p
Contract AT(40-1)-2598

Descriptors: (*Tokamak devices, *Plasma instability), Anisotropy, Distribution, Plasma heating, Research programs, Velocity.

For abstract, see NSA 30 04, number 09344.

PATENT-3 778 343 Not available NTIS
Atomic Energy Commission, Washington, D.C.
DEVICE FOR PLASMA CONFINEMENT AND HEATING BY HIGH CURRENTS AND NON-CLASSICAL PLASMA TRANSPORT PROPERTIES.
Patent,
Bruno Coppi, and Donald B. Montgomery. Filed 11 Mar 71, patented 11 Dec 73, 12p PAT-APPL-123 319
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Plasma devices, *Plasma control, *Patents, Toroids, Heating, Electron density, Microwaves, Plasma diagnostics.
Identifiers: PAT-CL-176-3.

It is an object of the invention, to overcome confinement heating difficulties by providing high currents and current densities so as to enhance the plasma resistivity over that resulting from the effects of electron collisions; the resistivity enhancement resulting from magnetic field modulation which produces trapping of part of the electron population and from a weak turbulence that is caused by the strong current density inside the plasma.

PATENT-3 779 864 Not available NTIS
Atomic Energy Commission, Washington, D.C.
EXTERNAL CONTROL OF ION WAVES IN A PLASMA BY HIGH FREQUENCY FIELDS.
Patent,
Predhiman K. Kaw, and John M. Dawson. Filed 29 Oct 71, patented 18 Dec 73, 8p PAT-APPL-193 749
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Plasma devices, *Patents, Plasma pinch, High frequency, Electromagnetic waves, Plasma diagnostics.
Identifiers: PAT-CL-176-1, Plasma instabilities.

The patent describes an apparatus and method for stabilizing plasma instabilities, in a magnetically confined plasma column by transmitting into the plasma high frequency electromagnetic waves at a frequency close to the electron plasma frequency. Said frequencies, e.g., are between the plasma frequency and 1.5 times said plasma frequency at a power level below the level for producing parametric instabilities in a plasma having temperatures from below 10 ev to about 10 KeV or more, at densities from below 10 to the 13th power to above 10 to the 18th power particles/cc. In another aspect this invention also provides a plasma diagnostic.

SC-TM-67-587 PC$4.75/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
ELECTROSTATIC GRIDDED PROBE EXPERIMENTS IN A COAXIAL RAIL GUN PLASMA PULSE.
R. L. Schellenbaum. Jul 67, 31p

Descriptors: (*Plasma guns, *Ion sources), Carbon, Electric probes, Electrostatics, Gold, Ion beams, Plasma diagnostics, Plasma jets.

For abstract, see NSA 30 04, number 09305.

SLA-74-5001 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
ELECTRIC FIELD MEASUREMENTS IN LASER PLASMAS.
C. W. Mendel. 4p CONF-740617-2

Descriptors: (*Laser-produced plasma, *Electric fields), Neodymium lasers, Polyethylenes, Proton beams, Spheres, Targets.

For abstract, see NSA 30 04, number 09331.

SLA-74-5252 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
THERMONUCLEAR REACTIONS IN SOLID SPHERICAL LASER TARGETS.
M. J. Clauser. 20p CONF-740439-1

Descriptors: (*Thermonuclear reactions, *Laser-radiation heating), Energy balance, Laser-produced plasma, Spheres.

For abstract, see NSA 30 04, number 09290.

UCRL-75465 PC$4.25/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
SUPERTHERMAL ELECTRON DISTRIBUTIONS IN LASER-PRODUCED PLASMAS.
H. D. Shay, D. Bailey, S. Bodner, J. Katz, and W. Kruer. 11 Apr 74, 24p CONF-740439-2

Descriptors: (*Laser-radiation heating, *Electron density), (*Laser-produced plasma, Electron density), Electron temperature, Polyethylenes, X-ray spectra.

For abstract, see NSA 30 04, number 09291.

20J. Quantum Theory

AD-783 477/3GA PC$3.25/MF$2.25
Harry Diamond Labs Washington D C
STATISTICAL MECHANICS OF ONE-DIMENSIONAL SINGLE COMPONENT LANDAU-GINZBURG FIELDS.
Technical rept.,
Richard P. Leavitt. Jan 74, 29p Rept no. HDL-TR-1657

Descriptors: *Phase transformations, Quantum theory, Ground state, Excitation, Specific heat, Magnetic fields, Mathematical models.
Identifiers: Ginzburg-Landau theory, Order parameters, Magnetic susceptibility.

The single-component Landau-Ginzburg problem is solved approximately in one dimension. A variational solution is obtained for the equivalent anharmonic oscillator problem in quantum mechanics; the specific heat, the susceptibility, the order parameter correlation function, and the order parameter in a small external field are obtained from the solution. These results show that there is no sharp phase transition, although the system becomes ordered at low temperatures upon application of a very small field. (Author)

COO-2280-8 PC$4.00/MF$2.25
Northwestern Univ., Evanston, Ill.
GLOBAL ESTIMATES FOR NONLINEAR REACTION AND DIFFUSION.
I. Stakgold. May 74, 15p
Contract AT(11-1)-2280

Descriptors: (*Reactor kinetics, *Differential equations), (*Chemical reaction kinetics, Differential equations), Boundary conditions, Diffusion, Nonlinear problems, Reactors.

For abstract, see NSA 30 04, number 11710.

COO-3069-187 PC$4.25/MF$2.25
Massachusetts Inst. of Tech., Cambridge.
INVARIANT QUANTIZATION, SCALE SYMMETRY AND EUCLIDEAN FIELD THEORY.
R. Jackiw. 1973, 21p DSR-77906

Descriptors: (*Quantum field theory, *Scale invariance), Commutators, Current algebra, Dimensions, Dual resonance model, S matrix.

For abstract, see NSA 30 05, number 14421.

COO-3071-87 PC$5.25/MF$2.25
Pennsylvania Univ., Philadelphia Dept. of Physics.
PRECISE VALUES FOR CRITICAL FIELDS IN QUANTUM ELECTRODYNAMICS.
G. Soff, B. Mueller, and J. Rafelski. Apr 74, 44p

Descriptors: (*Quantum electrodynamics, *Critical field), (*Atoms, *Binding energy), (*Muons, *Particle production), Corrections, Dirac equation, Electric charges, Electron-electron interactions, Electrons, Heavy ion reactions, Heavy ions, Ion collisions, Ionization, Mass, Nuclei, Relativistic range.

For abstract, see NSA 30 05, number 14422.

DESY-74-8 PC$4.50/MF$2.25
Deutsches Elektronen-Synchrotron (DESY), Hamburg (F.R. Germany).
SIGNIFICANCE OF CONFORMAL INVERSION IN QUANTUM FIELD THEORY.
K. Koller. Mar 74, 30p
U.S. Sales Only.

Descriptors: (*Quantum field theory, *Conformal invariance), Functions, Kernels, P invariance, Propagator.

For abstract, see NSA 30 04, number 11734.

IA-1282 PC$15.75/MF$2.25
Israel Atomic Energy Commission, Tel Aviv.
RESEARCH LABORATORIES ANNUAL REPORT, JANUARY–DECEMBER 1972.
Oct 73, 254p
U.S. Sales Only.

Descriptors: (*Mathematics, *Research programs), (*Chemistry, Research programs), (*Reactors, Research programs), Metallurgy, Neutrons, Nuclear physics, Radiation protection, Radiations, Radioisotopes, Solids.

For abstract, see NSA 30 04, number 11711.

IC-74-27 PC$5.00/MF$2.25
International Centre for Theoretical Physics, Trieste (Italy).
COMPOSITE GAUGE FIELDS AND MODELS.
P. Budini, and P. Furlan. Apr 74, 39p
U.S. Sales Only.

Descriptors: (*Gauge invariance, Leptons), (*Composite models, Leptons), (*Quantum electrodynamics, *P invariance), Antiparticles, Bootstrap model, Boundary conditions, Coupling, Coupling constants, Electric charges, Electromagnetic interactions, Field theories, Lagrangian function, Mass, Multiplets, Photons, Quantum numbers, Series expansion, Spinors, Symmetry breaking, Weak interactions.

For abstract, see NSA 30 05, number 14423.

IFA-FR-117-1974 PC$4.00/MF$2.25
Institutul de Fizica Atomica, Bucharest (Romania).
EXPERIMENTAL METHOD FOR THE DETERMINATION OF THE GRAVITATIONAL INTERACTION VELOCITY IN NEWTONIAN GRAVITATIONAL FIELDS.
G. Cristea. 1974, 13p
U.S. Sales Only.

Descriptors: (*Gravitational interactions, *Velocity), (*Moon, *Gravitational fields), Functions, Gravitation, Interactions, Time dependence.

For abstract, see NSA 30 04, number 11774.

JINR-E2-7725 PC$4.50/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
GENERALIZATION OF THE IRREDUCIBLE COEFFICIENT FUNCTIONS METHOD TO THE CASE OF FERMI PARTICLES: YUKAWA MODEL IN TWO-DIMENSIONAL SPACE--TIME.
L. G. Zastavenko. 1974, 26p
U.S. Sales Only.

Descriptors: (*Fermions, *Yukawa potential), (*Quantum field theory, Fermions), Boundary conditions, Coupling, Excited states, Functionals, Ground states, Scattering, Tamm-dancoff method.

For abstract, see NSA 30 04, number 11738.

JINR-E2-7788 PC$4.50/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
TAU-FUNCTIONS OF A SCALAR FIELD IN TERMS OF THE RELATIVISTIC WIENER PSEUDOPROCESS.
W. Garczynski. 1974, 26p
U.S. Sales Only.

Descriptors: (*Scalar fields, *Relativistic range), Functions, Lagrangian function, Quantum field theory.

For abstract, see NSA 30 04, number 11739.

JINR-E2-7790 PC$4.25/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
EIKONAL APPROXIMATION FOR HIGH ENERGY INCLUSIVE PROCESSES.
B. M. Barbashov, and V. V. Nesterenko. 1974, 22p
U.S. Sales Only.

Descriptors: (*Inclusive interactions, *Eikonal approximation), Cross sections, Pionization, Quantum field theory.

For abstract, see NSA 30 04, number 11740.

JINR-E2-7805 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of High Energy.
ON THE RELATIVISTIC LENGTH.
V. N. Streltsov. 1974, 12p
U.S. Sales Only.

Descriptors: (*Relativity theory, *Distance), Dimensions, Motion, Relativistic range.

For abstract, see NSA 30 04, number 11741.

JINR-E2-7864 PC$4.25/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
HIGH-ENERGY PROCESSES IN SCALE INVARIANT QUARK MODEL.
A. V. Efremov. 1974, 22p
U.S. Sales Only.

Descriptors: (*Nucleons, *Electromagnetic form factors), (*Proton-proton interactions, *Elastic scattering), (*Quark model, *Scale invariance), (*Pions, *Particle production), Distance, Electron-proton interactions, Hadron-hadron interactions, Inclusive interactions, Interactions, Mass, Pseudoscalars, Quantum field theory, Quarks, Scalar fields.

For abstract, see NSA 30 04, number 11742.

JINR-E2-7909 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
NONLINEAR IRREDUCIBLE FORM OF THE SCHROEDINGER EQUATION FOR THE GROUND STATE OF THE SECOND-QUANTIZED HAMILTONIAN.
L. G. Zastavenko. 1974, 11p
U.S. Sales Only.

Descriptors: (*Schroedinger equation, *Hamiltonians), (*Quantum field theory, Schroedinger equation), (*Many-body problem, Schroedinger equation), Ground states, Nonlinear problems, Series expansion.

For abstract, see NSA 30 05, number 14424.

JINR-E2-8027 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
RENORMALIZATION GROUP FOR NON-RENORMALIZABLE QFT.
D. I. Blokhintsev, A. V. Efremov, and D. V. Shirkov. 1974, 18p
U.S. Sales Only.

Descriptors: (*Quantum field theory, *Renormalization), Boundary conditions, Coupling constants, Functionals, Group theory, Mass, Particle models, Perturbation theory, Scale invariance, Series expansion, Ultraviolet radiation.

For abstract, see NSA 30 05, number 14425.

JINR-P2-7724 PC$4.25/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
YUKAWA MODEL IN THE THREE-DIMENSIONAL SPACE--TIME.
L. G. Zastavenko. 1974, 21p
In Russian. U.S. Sales Only.

Descriptors: (*Yukawa potential, *Space-time), Eigenfunctions, Hamiltonians, Mass, Mesons, Renormalization.

For abstract, see NSA 30 04, number 11776.

JINR-P2-7829 PC$4.25/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
ELECTRODYNAMICS EQUATION IN SPHERICAL WORLD.
A. B. Pestov, N. A. Chernikov, and N. S. Shavochina. 1974, 22p
In Russian. U.S. Sales Only.

Descriptors: (*Electrodynamics, *Spherical configuration).

For abstract, see NSA 30 05, number 14426.

JINR-P2-7883 PC$4.25/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
SCATTERING OF LIGHT BY LIGHT IN VECTOR ELECTRODYNAMICS.
V. A. Okhlopkova. 1974, 25p
In Russian. U.S. Sales Only.

Descriptors: (*Photon-photon interactions, *Scattering amplitudes), Boundary conditions, Differential cross sections, Electrodynamics, Polarization, Quantum electrodynamics, Total cross sections, Vectors.

For abstract, see NSA 30 05, number 14427.

LA-5594-MS PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
RELATIVISTIC SCHROEDINGER EQUATION.
L. Heller. Apr 74, 8p
Contract W-7405-eng-36

Descriptors: (*Two-body problem, *Lorentz invariance), Energy levels, Klein-gordon equation, Linear momentum, Lippmann-schwinger equation, Mass, Mathematical operators, Relativistic range, Reviews, Schroedinger equation, Spin, Unitarity.

For abstract, see NSA 30 04, number 11715.

UCID-16508 PC$6.75/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
COMPUTATIONS IN STATISTICAL MECHANICS.
B. J Alder. May 74, 74p
Contract W-7405-Eng-48

Descriptors: (*Many-body problem, *Statistical mechanics), Interactions, Lectures, Reviews.

For abstract, see NSA 30 04, number 11716.

20K. Solid Mechanics

AD-783 570/5GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
LOSS OF STABILITY OF A CYLINDRICAL SHELL ON LONGITUDINAL IMPACT,
A. B. Efimov, V. I. Malyi, and S. A. Uteshev. 27 Jun 74, 12p Rept no. FTD-HT-23-1505-74
Edited trans. of Mekhanika Tverdogo Tela (USSR) n1 p20-23 1971, by R. L. Dion.

Descriptors: *Shells(Structural forms), Cylindrical bodies, Impact, Dynamic loads, Stability, Translations, USSR.
Identifiers: *Cylindrical shells.

It was shown that the stability loss of a cylindrical shell on longitudinal impact against the end by an infinite mass is axisymmetric at the initial instant of bulging. The found theoretical wavelengths and the actual fact of the axisymmetric state of the initial stage of bulging are in good agreement with the known experimental data.

AD-783 784/2GA PC$11.25/MF$2.25
Naval Postgraduate School Monterey Calif
STRESS CONCENTRATION FACTORS FOR CIRCULAR NOTCHES.
Master's thesis,
Lawrence Jerome Smith. Jun 74, 165p

Descriptors: *Stresses, *Notch sensitivity, Computer programs, Theses.
Identifiers: Finite element analysis.

Existing finite element programs PLISOP and PLIMEG are modified and adapted to the successful determination of stress concentration factors for thin elastic bars containing V-shaped round bottom notches and subjected to tensile or bending loads. Accuracy and reliability are demonstrated. Comparisons are made with previous analytical and experimental determinations. The effects of finite bar thickness are discussed. (Author)

20L. Solid-State Physics

AD-783 634/9GA PC$3.75/MF$2.25
Massachusetts Inst of Tech Lexington Lincoln Lab
SOLID STATE RESEARCH, 1974:2.
Quarterly technical summary rept. 1 Feb-30 Apr 74,
Alan L. McWhorter. 15 May 74, 57p ESD-TR-74-208
Contract F19628-73-C-0002
See also AD-779 823.

Descriptors: *Solid state electronics, *Solid state physics, *Semiconductor lasers, *Microelectronics, *Quantum electronics, Scientific satellites, Scientific research, Photodiodes, Light emitting diodes, Laser materials, Carbon monoxide lasers, Semiconductor devices, Infrared images, Infrared lasers, Vidicons, Band theory of solids.
Identifiers: Laser spectroscopy, LES-8 satellite, LES-9 satellite.

This report covers in detail the solid state research work of the Solid State Division at Lincoln Laboratory for the period 1 February through 30 April 1974. The topics covered are Solid State Device Research, Quantum Electronics, Materials Research, Physics of Solids, and Microelectronics. (Modified author abstract)

AD-783 648/9GA PC$4.75/MF$2.25
Brown Univ Providence R I
ANNUAL TECHNICAL REPORT, JUL 1, 1972-JUNE 30, 1973, MATERIALS RESEARCH LABORATORY.
30 Jun 73, 128p
Grant NSF-GH-33631

Descriptors: *Scientific research, *Materials, Metals, Polymers, Mechanical properties, Liquid helium, Semiconductors, Electronics, Surface properties, Mineralogy, Glass, Nuclear magnetic resonance.

The research summaries in this report are contributions from individual investigators at Brown University and have been arranged in seven categories: Mechanical properties; Thermodynamics, transport and low temperature properties; Electronic properties of solids; Materials preparation, characterization and structure; Chemical properties; Solid surfaces and interfaces; Devices.

AD-783 658/8GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
SPECIFIC ELECTRICAL RESISTANCE, THERMO-E.M.F., AND HALL EFFECT OF MONO-ALUMINIDES OF IRON, COBALT AND NICKEL,
F. A. Sidorenko, A. N. Bashkavtov, L. P. Zelenin, P. V. Geld, and I. N. Dmitriev. 10 Apr 74, 7p Rept no. FSTC-HT-23-1633-73
Trans. of Ukrainskii Fizicheskii Zhurnal (USSR) v16 n11 Nov 71.

Descriptors: *Aluminum alloys, *Cobalt alloys, *Nickel alloys, *Iron alloys, Band theory of solids, Electrical resistance, Thermoelectricity, Hall effect, Intermetallic compounds, Translations, USSR.

The article discusses temperature relationships in mono-aluminides of iron, cobalt, and nickel in terms of specific resistance, coefficients of thermo-e.m.f., and significant value of Hall constant. Experimental data obtained on the basis of composition, structure, and magnetic susceptibility.

AD-783 731/3GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
APPARATUS FOR PRODUCING FILMS OF THERMOELECTRIC MATERIALS,
V. A. Naer, and V. V. Kravchuk. 19 Apr 74, 7p Rept no. FSTC-HT-23-2034-72
Trans. of Kholodilnaya Tekhnika i Tekhnologiya (USSR) n10 p44-48 1970.

Descriptors: *Thermoelectricity, Sputtering, Thin films, Bismuth compounds, Selenides, Tellurides, Mercury compounds, Chlorides, Translations, USSR.
Identifiers: Bismuth selenides, Bismuth tellurides, Mercury chlorides.

The method of L. Harris and B. Siegel, known under the name of 'instantaneous volatilization' was used for producing uniform films, identical to the initial material in composition. This method consists of continuously feeding a fine-grained powder of the alloy in small portions to a crucible, which is at a temperature sufficient for volatilization of all components. The substrate temperature must be such as to avoid revolatilization of any condensing component of the alloy. An n-type alloy of the following composition was selected as the initial thermoelectric material: 90% Bi2Te3+ 10% Bi2Se3 + 0.13% Hg2Cl2.

AD-783 734/7GA PC$20.50/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
THERMOELECTRIC SEMICONDUCTOR MATERIALS BASED ON BI2TE3,
B. M. Goltsman, B. A. Kudinov, and I. A. Smirnov. 21 Nov 73, 346p Rept no. FSTC-HT-23-1782-73
Trans. of mono. Poluprovodnikovye Termoelektricheskie Materialy na Osnove, Moscow, 1972 320p, by B. Kingsley and V. Vaguine.

Descriptors: *Thermoelectricity, *Semiconductors, Bismuth compounds, Tellurides, Books, Crystal defects, Impurities, Band theory of solids, Charge carriers, Optical properties, Phase transformations, Translations, USSR.
Identifiers: *Bismuth tellurides.

The physical-chemical thermal and optical properties of Bi2Te3 and solid solutions based on it are reviewed, as are the influences of defects and impurities. The technology of these materials is surveyed. The mobility and scattering mechanism of the charge carriers and the band structure are discussed. Thermoelectric efficiency is reviewed and practical applications are described.

AD-783 754/5GA PC$4.00/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
PBTE VALENCE BAND,
19 Apr 74, 13p Rept no. FSTC-HT-23-2039-72
Trans. of Fizika i Tekhnika Poluprovodnikov (USSR) v1 n8 p1222-1228 1967.

Descriptors: *Semiconductors, *Band theory of solids, Lead compounds, Tellurides, Hall effect, Electrical conductivity, Translations, USSR.
Identifiers: *Lead tellurides, *Valence bands, Effective mass.

A calculation of the valence band parameters of lead telluride was performed, taking into account the nonparabolic character of the light hole band. The temperature dependence of the thermo-emf and Hall electroconductivity coefficients were examined.

AD-783 821/2GA PC$4.25/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
DEVICES BASED ON THERMOELECTRICAL PHENOMENA,
A. F. Gorodetskii, A. F. Kravchenko, and E. M. Samoilov. 12 Apr 74, 24p Rept no. FSTC-HT-23-45-74
Trans. of mono. Osnovy Fiz. Poluprovod. i Poluprovod. Prib., n.p., 1966 p315-326.

Descriptors: *Thermoelectric power generation, *Semiconductor devices, Thermoelectricity, Electric power production, Refrigeration systems, Efficiency, Peltier effect, Translations, USSR.

The energy fundamentals of thermoelectric generators are presented, for the direct conversion of thermal energy into electrical at high efficiency and to produce cold in refrigeration units. The conditions under which the efficiency of an actual thermoelectric generator will be at a maximum are described. Thermostatting radioelectric devices are also discussed.

CEA-R-4540 PC$8.25/MF$2.25
CEA Centre d'Etudes Nucleaires de Grenoble, 38 (France).
APPLICATION OF STABLE NITROXIDE FREE RADICALS IN SOLUTION TO LOW MAGNETIC FIELD MEASUREMENTS.
R. Besson. Feb 74, 104p
In French. U.S. Sales Only.

Descriptors: (*Magnetic fields, *Measuring methods), Magnetic resonance, Magnetometers, Nitrogen oxides, Nuclear magnetic resonance, Polarization, Protons, Radicals, Relaxation, Sensitivity, Solvents.

For abstract, see NSA 30 04, number 12174.

COM-74-50681/7GA Not available NTIS
National Bureau of Standards, Washington, D.C.
SUPERTRANSFERRED HYPERFINE FIELDS AND COVALENCY AT DIAMAGNETIC CATIONS IN MAGNETIC INSULATORS.
Final rept.,
B. J. Evans, and L. J. Swartzendruber. 1 Jul 72, 9p
Pub. in Physical Review B, v6 n1 p223-231, 1 Jul 72.

Descriptors: *Antimony, *Mossbauer effect, *Hyperfine structure, Nuclear spin, Nickel ferrite, Yttrium iron garnets.

The sign and magnitude of the antimony hyperfine field has been measured in Sb substituted nickel Ferrite using the 121Sb Mossbauer effect. This result is compared with results obtained for Sn in YIG and, among the possible mechanisms, 3d-5s covalent spin transfer appears to make the predominate contribution to the hyperfine field.

COM-74-50696/5GA PC-GPO/MF$2.25-NTIS
Indian Inst. of Tech., New Delhi. Dept. of Physics.
ELECTRONIC ABSORPTION AND INTERNAL AND EXTERNAL VIBRATIONAL DATA OF ATOMIC AND MOLECULAR IONS DOPED IN ALKALI HALIDE CRYSTALS.
Final rept.,
S. C. Jain, A. V. R. Warrier, and S. K. Agarwal. Jul 74, 54p NSRDS-NBS-52
Library of Congress Catalog Card No. 74-600010.
Paper copy available from GPO $0.95.

Descriptors: *Alkali metal compounds, *Additives, *Absorption spectra, *Raman spectra, *Infrared spectra, Vibrational spectra, India, Tables(Data), Chlorides, Bromides, Fluorides, Iodides, Sodium halides, Potassium halides, Lithium halides, Cesium inorganic compounds, Rubidium halides, Crystal structure, Bond theory of solids.
Identifiers: Alkali halides.

Spectral data for more than 70 atomic and molecular ions doped in alkali halide crystals are tabulated. The tables include electronic absorption data, listings of internal vibrational frequencies of doped complex ions, and tabulations of the frequencies of external modes. The data that appear in the tables were selected on the basis of the consistency among different authors, the types of instruments, and the temperature of measurement. In addition to the data, the tables include the spectroscopic assignments given by the authors in the references cited.

COM-74-50712/0GA Not available NTIS
National Bureau of Standards, Washington, D.C.
NEUTRON-QUASIELASTIC-SCATTERING STUDY OF HYDROGEN DIFFUSION IN A SINGLE CRYSTAL OF TANTALUM.
Final rept.,
J. M. Rowe, J. J. Rush, and H. E. Flotow. 15 Jun 74, 7p
Sponsored in part by Atomic Energy Commission, Washington, D.C.
Pub. in Physical Review B, v9 n12 p5039-5045, 15 Jun 74.

Descriptors: *Tantalum, *Hydrogen, *Diffusion, Single crystals, Neutron scattering, Elastic scattering, Crystal structure.

The diffusion of hydrogen in a single crystal of tantalum (TaH0.02) at 584K has been investigated by neutron-quasielastic scattering at a variety of crystal orientations, and over a range of wave-vector transfer. A detailed analysis of the observed quasielastic line shapes and widths shows that the results cannot be fitted by any single jump-diffusion model involving instantaneous jumps between octahedral and tetrahedral interstitial sites. The quasielastic width curves are much more isotropic than those predicted by any of the hydrogen-jump models, although the general shape of the widths at large Q is closer to that predicted by a tetrahedral-site model. Analysis of the data also provides an average 'mean-square hydrogen vibration amplitude.' In addition, a value for the macroscopic diffusion constant at 584K is derived.

COM-74-50719/5GA Not available NTIS
National Bureau of Standards, Washington, D.C.
LATTICE DYNAMICS OF POLYGLYCINE. I.
Final rept.,
Bruno Fanconi. 1 Sep 72, 8p
Pub. in Jnl. of Chemical Physics, v57 n5 p2109-2116, 1 Sep 72.

Descriptors: *Glycine, *Lattice vibrations, Molecular vibration, Hydrogen bonds, Phonons, Polymers.
Identifiers: *Poly(imino-methylene-carbonyl).

The two-dimensional lattice vibrations of the extended form of polyglycine have been calculated from a five mass model of the glycine chemical repeat unit and with interchain hydrogen bond stretching. The effects of hydrogen bond bending and torsion on the lattice modes are determined using a model in which the entire chemical repeat unit is treated as a single dynamical unit. The valence force field for the latter model is found by fitting the optical frequencies determined from the five mass calculation. The density of phonon states for the two-dimensional lattice is determined for the single mass model.

COM-74-50738/5GA Not available NTIS
National Bureau of Standards, Washington, D.C.
PEIERLS TRANSITIONS IN SEMIMETALLIC ONE DIMENSIONAL CHARGE TRANSFER SALTS.
Final rept.,
C. S. Koonce. 1974, 4p
Pub. in Solid State Communications, v14 n11 p1141-1144 1974.

Descriptors: *Charge transfer, *Organic salts, Electron phonon interactions, Phonons.
Identifiers: *Peierls transitions.

Peierls transitions in one demensional charge transfer salts in which both donor and acceptor molecules have even valency such as TTF--TCNQ have been studied. Transitions involving macroscopic occupation of phonon states occur.

COO-2220-23 PC$5.00/MF$2.25
Institute for Advanced Study, Princeton, N.J.
QUANTUM DYNAMICS OF A MASSLESS RELATIVISTIC STRING. II.
A. Patrascioiu. May 74, 37p
Contract AT(11-1)-2220

Descriptors: Equations of motion, Hamiltonian function, Lagrangian function, Mechanical vibrations, Oscillations, Quantum mechanics, Relativity theory, Tachyons.

For abstract, see NSA 30 05, number 14733.

COO-3429-23 PC$4.00/MF$2.25
Pittsburgh Univ., Pa. Dept. of Chemistry.
MAGNETIC PROPERTIES OF R/SUB 2-X/R/SUB X/'CO SUB 17 COMPOUNDS (R = GD, DY, HO OR ER, R' = TH OR CE).
K. S. V. L. Narasimhan, and W. E. Wallace. 1973, 14p

Descriptors: (*Gadolinium alloys, *Magnetic properties), (*Dysprosium alloys, Magnetic properties), (*Holmium alloys, Magnetic properties), (*Erbium alloys, Magnetic properties), Chemical composition, Crystal structure, Quantity ratio, Thorium alloys, Cerium alloys.

For abstract, see NSA 30 05, number 13166.

EGG-565-134 PC$4.00/MF$2.25
EG and G, Inc., Goleta, Calif.
CRYSTAL GROWTH AND ELECTRO-OPTICAL CHARACTERIZATION OF BISMUTH TRIIODIDE.
M. M. Schieber, T. J. Davies, H. A. Lamonds, W. F. Schnepple, and P. T. Randtke. Apr 74, 15p
CONF-740527-1
Contract AT(26-1)-565

Descriptors: (*Bismuth iodides, *Crystal growth), Optical properties, Photoconductivity, Purification, Reflection.

For abstract, see NSA 30 04, number 12157.

JINR-P4-7766 PC$4.25/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
ELEMENTARY EXCITATIONS WITHIN THE HEISENBERG MODEL WITH BIQUADRATIC EXCHANGE.
I. L. Buchbinder, and B. Westwanski. 1974, 22p
In Russian. U.S. Sales Only.

Descriptors: Diagrams, Energy spectra, Exchange interactions, Excitation, Hamiltonians, Magnetic materials, Spin.

For abstract, see NSA 30 04, number 12096.

JUL-1027-MA PC$4.50/MF$2.25
Kernforschungsanlage Juelich G.m.b.H. (F.R. Germany). Zentralinstitut fuer Angewandte Mathematik.
STATIONARY SOLUTION OF THE DIFFUSION EQUATION WITH DRIFT-TERM.
M. Profant, and H. Walther. Dec 73, 28p
In German. U.S. Sales Only.

Descriptors: (*Crystal lattices, *Defects), Differential equations, Numerical solution, Physical radiation effects, Ritz method, Variational methods.

For abstract, see NSA 30 04, number 10216.

JUL-987-FF PC$6.00/MF$2.25
Kernforschungsanlage Juelich G.m.b.H. (F.R. Germany). Inst. fuer Festkoerperforschung.
SUPERCONDUCTIVITY OF PALLADIUM AND PD--AG ALLOYS AFTER ION IMPLANTATION OF HYDROGEN AND DEUTERIUM.
B. Stritzker. Aug 73, 56p
In German. U.S. Sales Only.

Descriptors: (*Palladium alloys, *Superconductivity), (*Silver alloys, Superconductivity), (*Palladium, Superconductivity), (*Hydrogen, *Ion implantation), Deuterium, Quantity ratio, Transition temperature.

For abstract, see NSA 30 04, number 11292.

KFKI-74-8 PC$4.25/MF$2.25
Kozponti Fizikai Kutato Intezet, Budapest (Hungary).
NMR IN DILUTE ALLOYS.
K. Tompa. 1974, 22p CONF-740125-1
U.S. Sales Only.

Descriptors: (*Nuclear magnetic resonance, *Copper base alloys), Bibliographies, Electric fields, Impurities, Magnetic fields, Reviews.

For abstract, see NSA 30 04, number 12159.

LA-UR-74-737 PC$4.25/MF$2.25
Los Alamos Scientific Lab., N.Mex.
SUPERCONDUCTING MAGNETIC ENERGY STORAGE.
H. L. Laquer. 1974, 22p CONF-740509-7
Contract W-7405-eng-36

Descriptors: (*Energy storage, *Superconducting magnets), (*Theta pinch, Energy storage), Energy losses, Induction, Magnet coils, Power supplies.

For abstract, see NSA 30 05, number 14105.

LBL-2724 PC$14.00/MF$2.25
California Univ., Berkeley Lawrence Berkeley Lab.
ELECTRONIC STRUCTURE OF COMPLEX CRYSTALLINE AND AMORPHOUS SEMICONDUCTORS.
J. Joannopoulos. May 74, 220p
Contract W-7405-eng-48

Descriptors: (*Semiconductor materials, *Electronic structure), Arsenic compounds, Band theory, Crystal structure, Density, Gallium compounds, Germanium, Optical properties, Selenium, Silicon, Tellurium, Zinc sulfides.

For abstract, see NSA 30 04, number 12160.

LNF-73-52 PC$4.00/MF$2.25
Comitato Nazionale per l'Energia Nucleare, Frascati (Italy). Laboratori Nazionali di Frascati.
EXCITONS.
G. Baldacchini. 5 Sep 73, 11p
In Italian. U.S. Sales Only.

Descriptors: (*Excitons, *Radiation detection), Semiconductor materials.

For abstract, see NSA 30 04, number 12185.

ORNL-4952 PC$7.60/MF$2.25
Oak Ridge National Lab., Tenn.
SOLID STATE DIVISION ANNUAL PROGRESS REPORT FOR PERIOD ENDING DECEMBER 31, 1973.
May 74, 164p
Contract W-7405-eng-26

Descriptors: (*Solids, *Electronic structure), (*Metals, *Physical radiation effects), (*Alloys, Physical radiation effects), (*Dielectric materials, *Physical properties), Aluminium alloys, Ammonium compounds, Amorphous state, Angular momentum, Band theory, Binary alloy systems, Cadmium tellurides, Chlorates, Cobalt alloys, Cobalt compounds, Cobalt sulfides, Crystal field, Deuterium compounds, Dysprosium, Europium oxides, Exchange interactions, Excitation, Ferrite, Gadolinium, Gadolinium oxides, Gallium alloys, Germanium compounds, Gold, Gold alloys, Helium 4, Impurities, Intermetallic compounds, Iodine, Iron, Iron alloys, Lattice vibrations, Magnetic moments, Magnetic properties, Magnons, Measuring methods, Neutrons, Nickel, Nickel alloys, Niobium, Oxygen, Palladium, Palladium compounds, Palladium hydrides, Paramagnetism, Phonons, Potassium alloys, Rubidium, Rubidium alloys, Scandium, Scattering, Silicides, Silver alloys, Spectra, Temperature dependence, Terbium alloys, Thulium alloys, Wave functions, Yttrium alloys, Benzene, Collisions, Defects, Energy levels, Ion channeling, Ionic crystals, M codes, Magnetic susceptibility, Molecular structure, Organic chlorine compounds, Particle beams, Point defects, Simulation, Statistics, Transition elements, Auger effect, Beryllium, Copper, Cryostats, Design, Dislocations, Elasticity, Electric conductivity, Electron capture, Electron microscopy, Grain boundaries, Helium ions, Ion beams.

For abstract, see NSA 30 04, number 10264.

PB-234 329/1GA PC$3.25/MF$2.25
North Carolina State Univ., Raleigh. Dept. of Civil Engineering.
ASPECTS OF THEORETICAL PLASTICITY AT FINITE DEFORMATION AND LARGE PRESSURE.
Interim rept.,
Kerry S. Havner. Jun 74, 28p NSF-GK-31313-74-3
Grant NSF-GK-31313

Presented at the Annual Meeting, Society of Engineering Science (11th) held at Duke University on 11-13 Nov, 1974.

Descriptors: *Crystals, *Plastic properties, *Deformation, Single crystals, Thermodynamics, Crystal lattices, Stresses, Pressure, Mathematical models.

A broad theoretical investigation of plasticity in crystalline solids at finite deformation is presented, with primary attention focused upon single crystals and aggregates at large pressure. Nonlinear elastic and nonlinear plastic constitutive relations for cubic crystals undergoing quasi-static deformation processes are studied. An aggregate model is introduced which enables transition to macroscopic behavior, including a prediction of pressure-dependence of yield surfaces in macrostress space.

20M. Thermodynamics

AD-783 793/3GA PC$6.00/MF$2.25
Naval Postgraduate School Monterey Calif
NATURAL CONVECTION FLOW VISUALIZATION AND HEAT TRANSFER FROM A HORIZONTAL CIRCULAR DISK.
Master's thesis,
Joseph Michael O'Connor. Jun 74, 60p

Descriptors: *Convection(Heat transfer), *Flow visualization, Disks, Experimental design, Heat transfer, Turbulence, Laminar flow, Plumes, Theses.

The study of natural convection incorporates a flow visualization procedure, with heat transfer experiments on a circular mirror like surface, in a cylindrical enclosure. A flow visualization procedure using Thymol Blue sodium salt in distilled water was conducted. Photographs are presented which show the cellular flow pattern on the horizontal test surface and the nature of the flow in the plume. Problems applying the flow visualization technique are discussed. Photographs are presented which show the effect of voltage on a laminar natural convection flow in the plume. Transition to turbulence in the plume was observed. Experimental results are presented for the heat transfer from the horizontal circular disk. This data was compared to previously reported results and the agreement was good. (Modified author abstract)

COM-74-50703/9GA Not available NTIS
National Bureau of Standards, Washington, D.C.
PHONONS AND LAMBDA TEMPERATURE IN LIQUID 4HE AS OBTAINED BY THE LATTICE MODEL.
Final rept.,
Paul H. E. Meijer, and W. D. Scherer. 1974, 3p
Pub. in Proceedings of International Conference on Low Temperature Physics (13th), Boulder, Colo., 21-25 Aug 72, Paper LT13 v1 p84-86 1974.

Descriptors: *Liquid helium, *Helium 4, Phonons, Transition temperature, Density(Mass/volume).
Identifiers: Lambda transition.

This paper describes the density of the condensate in Helium four from T = 0 to the lambda temperature using an extension of the Matsubara Matsuda Lattice model.

SLA-74-219 PC$5.75/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
EXACT SOLUTION TO THE ONE-DIMENSIONAL STATIONARY ENERGY EQUATION FOR A SELF-HEATING SLAB.
A. R. Shouman, and A. B. Donaldson. May 74, 55p
Contract AT(29-1)-789

Descriptors: (*Self-energy, *Numerical solution), (*Slabs, *Heating), Boundary conditions, Cartesian coordinates, Chemical reactions, Cooling, Decomposition, Detonations, Energy, Explosives, Nonlinear problems, One-dimensional calculations.

For abstract, see NSA 30 04, number 12085.

21. PROPULSION AND FUELS

21B. Combustion and Ignition

AD-783 563/0GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
IGNITION OF MAGNESIUM PARTICLES IN VARIOUS MEDIA,
V. A. Fedoseev, V. E. Glushkov, and L. A. Sokolov. 27 Jun 74, 10p Rept no. FTD-HT-23-1214-74
Edited trans. of Fizika Aerodispersnykh Sistem (USSR) n6 p68-72 1972, by Frank C. Vaughn.

Descriptors: *Ignition, *Magnesium, Particles, Translations, USSR.

AD-783 574/7GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
BURNING OF CONDENSED ALUMINIZED SYSTEMS UNDER OVERLOAD,
S. K. Ordzhonikidze, A. D. Margolin, P. F. Pokhil, and A. S. Uralov. 28 Jun 74, 20p Rept no. FTD-HT-23-1219-74
Edited trans. of Fizika Goreniya i Vzryva (USSR) v7 n4 p536-544 Dec 71, by Marilyn Olaechea.

Descriptors: *Aluminum, *Burning rate, *Inertia, Force(Mechanics), Combustion, Slags, Chemical composition, Ammonium perchlorate, Acceleration, Translations, USSR, Mathematical models, Rotation, Particles, Powder metals.

In a number of cases inertial forces applied to a burning substance significantly increase the burning rate. In the present study the burning of aluminized systems is studied experimentally and theoretically. Measured were the combustion rate, mass, and composition of slags forming in a condensed system consisting of 70% ammonium perchlorate, 15% rubber, and 15% aluminum powder with a particle dimension size of about 10 micrometers. For the purpose of creating the overloads the specimen was attached radially to a disc (radius 4.5 cm), which together with the electrical motor which rotated it was placed in a vessel with a volume of 2 which was filled with nitrogen when the disc reached a constant rate of rotation, an electrical igniter was used to ignite the specimen.

AD-783 635/6GA PC$4.75/MF$2.25
Honeywell Inc Minneapolis Minn Government and Aeronautical Products Div
THERMAL MATH MODEL DEVELOPMENT FOR A RESONANT CAVITY TEMPERATURE SENSOR.
Final rept. 28 Jun-31 Dec 73,
M. J. Hoglund, and W. M. Posingies. Mar 74, 147p Rept no. GAPD-40107-FR AFAPL-TR-74-9
Contract F33615-73-C-2079

Descriptors: *Temperature measuring instruments, Cavity resonators, Fluidics, Mathematical models, Combustors, Ramjet engines, Heat transfer, Thermocouples, Computer programs.

The use of fluidic, resonant cavity temperature sensors has shown some promise for measuring ramjet engine combustor temperatures ranging up to 4000R. This program was established to develop a thermal math model of the temperature sensor through testing and analysis. With a thermal math model, approaches can be evaluated for reducing heat transfer losses and for evaluating techniques to compensate for sensor errors. Test variables for the sensor were insulator material and mass flow through the sensor. The insulator materials used were Hastelloy X, magnesium oxide and zirconium oxide. These materials had a thermal conduc-

tivity range of about 10 to 1. The test data was used to adjust the math model and validate its performance. The general heat transfer approach used for developing the math model is described. Techniques are also evaluated for compensating sensor errors. Lastly, sensor performance is evaluated over a large range of ramjet combustor pressure and temperature conditions. (Modified author abstract)

AD-783 835/2GA PC$4.25/MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
REACTION ZONE DURING DETONATION OF TWO-PHASE MIXTURES,
A. A. Borisov, B. E. Gelfand, S. A. Gubin, S. M. Kogarko, and A. L. Podrebenkov. 15 Apr 74, 23p Rept no. FSTC-HT-23-1209-73
Trans. from Fizika Goreniya i Vzryva (USSR) v6 n3 1970.

Descriptors: *Detonations, *Detonation waves, *Combustion, Level(Quantity), Drops, Combustion chambers, Thermodynamics, Gas dynamics, Translations, USSR, Vapor phases, Liquid phases, Diffusion, Heat transfer, Burning rate, Crushing, Vaporization, Two phase flow, Particle size.
Identifiers: Primary waves.

The article examines thermodynamic and gas dynamic parameters of wave diffusion and speed of heat evolution in the reaction zone of a combustion chamber during heterogeneous detonation of two-phase mixtures. Combustion of liquid drops (heptane and gaseous oxygen) distributed in an atmosphere of a gaseous oxidizer is compared on the basis of two models: vaporation and crushing. Graphs of parameters of flow given for both models in terms of size of drops shows that combustion speed by vaporization compares to that by crushing only for very small drops.

21D. Fuels

BNL-18651 PC$4.75/MF$2.25
Brookhaven National Lab., Upton, N.Y.
IRON TITANIUM HYDRIDE AS A SOURCE OF HYDROGEN FUEL FOR STATIONARY AND AUTOMOTIVE APPLICATIONS.
J. J. Reilly, K. C. Hoffman, G. Strickland, and R. H. Wiswall. 1974, 31p CONF-740407-4

Descriptors: (*Hydrogen storage, *Hydrides), (*Automobiles, *Energy sources), Compressibility, Environmental effects, Fuel cells, Gas turbines, Hydrides, Internal combustion engines, Iron hydrides, Liquefaction, Safety, Synthetic fuels, Titanium hydrides.

For abstract, see NSA 30 05, number 14693.

BNL-18887 PC$4.25/MF$2.25
Brookhaven National Lab., Upton, N.Y.
METAL HYDRIDES AS HYDROGEN STORAGE MEDIA. A SUMMARY WITH APPENDIX.
J. J. Reilly, R. H. Wiswall, K. C. Hoffman, and C. H. Waide. May 74, 23p CONF-740543-1

Descriptors: (*Hydrogen storage, *Chemisorption), Calcium hydrides, Cerium hydrides, Hydrides, Iron hydrides, Lithium hydrides, Magnesium hydrides, Nickel hydrides, Potassium hydrides, Titanium hydrides, Uranium hydrides, Vanadium hydrides, Zirconium hydrides.

For abstract, see NSA 30 05, number 14694.

CEA-CONF-2562 PC$4.00/MF$2.25
CEA Centre d'Etudes Nucleaires de Grenoble, 38 (France).
STORAGE AND UTILIZATION OF LIQUID HYDROGEN ON BOARD THE "PEGASE".
G. Bertrand, P. Perroud, and J. Rebiere. Oct 73, 20p CONF-731138-2
In French. U.S. Sales Only.

Descriptors: (*Hydrogen storage, *Cryogenic tanks), (*Space vehicles, Hydrogen storage), Uses.

For abstract, see NSA 30 05, number 14695.

COM-74-11341/6GA PC$3.00/MF$2.25
Alaska Univ., Anchorage. Div. of Business, Economics, and Public Administration.
THE COASTAL BOUNDARIES OF NAVAL PETROLEUM RESERVE NO. 4,
George Wayne Skladel. May 74, 22p Alaska Sea Grant Pub-73-12 NOAA-74070302

Descriptors: *Territorial seas, *Crude oil, Alaska, Boundaries, Reserves, Coasts, Mineral deposits, Natural resources, Navy, Law(Jurisprudence), Arctic Ocean, Harrison Bay, Smith Bay, Peard Bay, Kasegaluk Lagoon.
Identifiers: *Naval petroleum reserves, *Law of the sea, Contiguous zone, *Petroleum deposits.

Coastal boundaries of Naval Petroleum Reserve No 4 are examined. Information is given on the coastline as defined by the Submerged Lands Act of 1953, as defined by the 1958 United Nations Convention on the Territorial Sea, and the contiguous zone. Included are applications of the 1953 Act, and 1958 Convention in determining the coastline of Alaska along Naval Petroleum Reserve No. 4 and its comparison with the New Reserve Boundaries.

21E. Jet and Gas Turbine Engines

AD-783 560/6GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
STUDY OF LOCAL HEAT EXCHANGE ALONG THE CONTOUR OF A TURBINE PROFILE,
V. M. Kapinos, and A. F. Slitenko. 25 Jun 74, 12p Rept no. FTD-HT-23-914-74
Edited trans. of Energeticheskoe Mashinostroenie (USSR) n10 p42-47 1970, by Victor Mesenzeff.

Descriptors: *Gas turbines, *Cooling, Gas turbine blades, Laminar flow, Turbulent flow, Heat transfer, Translations, USSR.

AD-783 823/8GA PC$4.50/MF$2.25
General Motors Corp Indianapolis Ind Detroit Diesel Allison Div
IMMINENT ENGINE FAILURE PROBE INVESTIGATION.
Final rept. 1 Nov 72-30 Apr 74,
Gail E. Hill. Apr 74, 118p Rept no. DDA-EDR-8134 AFAPL-TR-74-30
Contract F33615-73-C-2036

Descriptors: *Gas turbines, *Electrostatic probes, Failure(Mechanics), Engines, Exhaust gases, Failure, Probes, Plasmas(Physics), Density.
Identifiers: Gas turbine engines, TF-41 engines, T-56 engines.

The testing conducted and reported herein was an 18 month experimental program to determine the worth of an electrostatic probe and associated electronics as an indicator of engine health. The program consisted of laboratory tests, gas turbine engine probe location tests, particle injection tests, probe signature determination, development of data recording techniques, accumulation of data during durability testing of T56 or TF41 engines and any other opportunistic gas turbine engine test. The electrostatic probe demonstrated some capability to detect engine distress in TF41 and T56 engines; however, this program did not develop a reliable satisfactory engine failure detector system. Additional effort will be necessary to assure this. (Author)

AD-783 927/7GA PC$3.00/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio
SOLUTIONS TO THE DIRECT PROBLEM OF HEAT TRANSFER BETWEEN A COOLED TURBINE BLADE AND GAS USING THE DISPERSION METHOD,
A. M. Topunov, R. D. Iosifov, and N. G. Rodionov. 24 Jul 74, 12p Rept no. FTD-HT-23-726-74
Edited trans. of Inzhenerno-Fizicheskii Zhurnal (USSR) v21 n3 p531-536 Sep 71, by K. L. Dion.

Descriptors: *Gas turbine blades, *Heat transfer, Differential equations, Air cooled, Translations, USSR.

The dispersion method is used to solve a differential equation of the third order describing heat exchange between gas and a cooled turbine blade.

21G. Reciprocating Engines

AD-783 647/1GA PC$3.75/MF$2.25
Coast Guard Baltimore Md Field Testing and Development Center
DIESEL STERN DRIVES FOR UTILITY BOATS.
Final rept.,
P. B. Fontineau, and G. P. Clark. Aug 72, 58p Rept no. FTDC-528

Descriptors: *Coast Guard, *Search and rescue, *Boats, *Marine surface propulsion, *Diesel engines, Drives, Exhaust systems, Performance(Engineering), Noise reduction.
Identifiers: *Stern drives, Inboard outboard drives.

A standard 30-foot Coast Guard Utility boat was modified to evaluate the feasibility of using a Diesel powered stern drive unit to improve the handling characteristics of this type of boat. Endurance tests were conducted on a standard commercially available stern drive unit to determine its suitability for Coast Guard use and to provide design criteria for future utilization of stern drives. Standardization trails were performed for comparison of performance with conventional utility boats. A noise level survey was carried out to determine whether the stern drive with an underwater exhaust system was significantly quieter than conventional boats. (Modified author abstract)

AD-783 747/9GA MF$2.25
Army Foreign Science and Technology Center Charlottesville Va
CAVITATION DAMAGE IN DIESEL ENGINES,
N. N. Ivanchenko, A. A. Skurdin, and M. D. Nikitin. 27 Feb 74, 236p Rept no. FSTC-HT-23-0585-74
Trans. of mono. Kavitatsionnye Razrusheniya v Dizelyakh, Leningrad, 1970 152p.
Availability: Available in microfiche only.

Descriptors: *Diesel engines, *Cavitation corrosion, Damage, Computations, Reduction, Water, Temperature, Translations, USSR.

The book deals with cavitation damage to diesel engine parts, methods of controlling this damage, and techniques for calculating and accelerated testing of parts for cavitation resistance. Principal factors leading to cavitation erosion in diesel engines are examined: water temperature in diesel engine cooling jackets, design factors, and operating factors. Methods of calculating vibrational acceleration of cylinder liners are outlined; estimates are presented of the possible amplitudes and critical accelerations of vibrations in the surfaces of parts swept by water in a diesel engine. (Modified author abstract)

21H. Rocket Motors and Engines

AD-783 752/9GA PC$6.50/MF$2.25
Foreign Technology Div Wright-Patterson AFB Ohio

ROCKET ENGINES ON A COMBINED FUEL,
E. B. Volkov, and G. Yu. Mazing. 24 Jun 74, 256p
Rept no. FTD-MT-24-827-74
Edited machine trans. of mono. Raketnye Dvigateli na Kombinirovannom Toplive, Moscow, 1973 p1-184, by Robert D. Hill.

Descriptors: *Hybrid rocket engines, *Combustion, Heat exchangers, Solid rocket propellants, Liquid rocket propellants, Heat transfer, Combustion chambers, Burning rate, Ignition, Control, Translations, USSR.

Contents:
- General information about combined rocket engines;
- Heat exchange in the combustion chamber of combined rocket engines;
- Heterogeneous burning in the combined rocket engine;
- Selection of the basic parameters of combustion chamber of a combined rocket engine;
- Static characteristics of combined rocket engines;
- The control of combined rocket engines.

AD-783 849/3GA PC$3.75/MF$2.25
Air Force Rocket Propulsion Lab Edwards AFB Calif
PYROLYTIC GRAPHITE COATED THROAT INSERTS,
William F. Payne. Aug 74, 55p Rept no. AFRPL-TR-74-42
Presented at the AIAA/SAE Joint Propulsion Specialist Conference (9th), Las Vegas, Nev., Nov 73. Paper No. AIAA-73-1260.

Descriptors: *Rocket nozzles, *Nozzle inserts, Nozzle throats, Pyrolytic graphite, Refractory coatings, Silicon carbides, Vapor deposition, Solid propellant rocket engines, Graphite, Hafnium compounds, Zirconium compounds, Carbides, Thermal expansion.

A review is presented of efforts to develop and demonstrate PG coated throat inserts in solid propellant rocket nozzles. Discussion of modification attempts such as SiC, HfC and ZrC additions and chemically graded coatings is included. Selected test results on thermal expansion and erosion rates are provided. (Modified author abstract)

22. SPACE TECHNOLOGY

22A. Astronautics

JPRS-62550 PC$3.00/MF$2.25
Joint Publications Research Service, Arlington, Va.
SCIENTIFIC STUDIES IN SPACE--SOME RESULTS, PROBLEMS, AND PROSPECTS,
R. Z. Sagdeev, and Yu. I. Zaitsev. 23 Jul 74, 23p
Trans. of Priroda (USSR), n5 p4-13 May 74.

Descriptors: *Space exploration, Translations, USSR, Artificial satellites, Scientists, Ionosphere, Solar wind, Magnetosphere, Radiation belts, Auroras, Solar flares, Cosmic rays, Lunar probes, Mars probes.

The report contains a review of some results, problems, and prospects of scientific studies in space.

22C. Spacecraft Trajectories and Reentry

AD-783 637/2GA PC$8.00/MF$2.25
Aerospace Corp El Segundo Calif
TRACE TRAJECTORY ANALYSIS AND ORBIT DETERMINATION PROGRAM. VOLUME VII. USAGE GUIDE, PART A: INPUT DATA (REISSUE B),
Willard D. Downs, III, Robert H. Prislin, Dennis C. Walker, and Robert J. Mercer. 31 May 74, 374p
Rept no. 0TR-0059(9320)-1-vol-7-pt-a0 SAMSO-TR-71-141-Vol-7-Pt-A
Contracts 0F04701-70-C-0059, 0F04701-72-C-0073
Sponsored in part by Contract F04701-73-C-0074.
See also Reissue B, Part B, AD-783 729. Supersedes report dated 15 Dec 72, AD-766 260.

Descriptors: *Orbits, *Satellite tracking systems, *Computer programming, Control sequences, Ephemerides, Statistical analysis, Instruction manuals, Computations, Computerized simulation.
Identifiers: *TRACE computer programs, *Satellite orbits.

The TRACE Trajectory Analysis and Orbit Determination Program is a general-purpose orbital analysis program. It was written and continues to be developed specifically to assist technical personnel in the analysis and design of satellite orbits and tracking systems. Volume 7 is intended to serve as in input usage guide that defines all input required to perform TRACE functions such as trajectory generation, data/observation generation, orbit determination, and statistical analysis. (Modified author abstract)

AD-783 729/7GA PC$8.25/MF$2.25
Aerospace Corp El Segundo Calif
TRACE TRAJECTORY ANALYSIS AND ORBIT DETERMINATION PROGRAM. VOLUME VII. USER'S GUIDE, PART B: APPENDICES (REISSUE B),
Willard D. Downs, III, Robert H. Prislin, Dennis C. Walker, and Robert J. Mercer. 31 May 74, 391p
Rept no. 0TR-0059(9320)-1-vol-7-pt-b0 SAMSO-TR-71-141-Vol-7-Pt-B
Contracts 0F04701-70-C-0059, 0F04701-72-C-0073
Sponsored in part by Contract F04701-73-C-0074.
See also Reissue B, Part A, AD-783 637.

Descriptors: *Orbits, *Satellite tracking systems, *Computer programming, Control sequences, Ephemerides, Statistical analysis, Instruction manuals, Computations, Computerized simulation.
Identifiers: *TRACE computer program, *Satellite orbits.

The TRACE Trajectory Analysis and Orbit Determination Program is a general-purpose orbital analysis program. It was written and continues to be developed specifically to assist technical personnel in the analysis and design of satellite orbits and tracking systems. Volume VII is intended to serve as in input usage guide that defines all input required to perform TRACE functions such as trajectory generation, data/observation generation, orbit determination, and statistical analysis. The report contains the appendices which includes: Description of the general-purpose input routine GAIL 1; Trace data deck structure examples; Sample output descriptions; and Trace input forms.

SLA-74-230 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
RADIAL BASE HEAT-TRANSFER GRADIENTS IN TURBULENT FLOW.
B. M. Bulmer. May 74, 18p
Contract 0AT(29-1)-7890

Descriptors: (*Space vehicles, *Reentry), (*Heat transfer, *Numerical solution), Ablation, Data, Geometry, Trajectories, Turbulence, Turbulent flow.

For abstract, see NSA 30 04, number 12194.

REPORT LOCATOR LIST

This list comprises all the reports cited in this issue. It is arranged alpha-numerically by accession number. The subject field and group where the report citation can be located in the journal precedes the accession number.

All of the reports announced in this issue are indexed by corporate author, subject, personal author, contract number, and accession/report number in the companion index **Volume 74, Number 21.**

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